

# OWNERS MANUAL

PRICE \$1.00

SERIAL NUMBER

MODEL NO. 931016 S-12  
HYDRAULIC LIFT W/FRONT AND  
REAR ROCKSHAFT  
SERIAL NO. 000101 AND UP

MODEL NO. 931017 S-14  
HYDRAULIC LIFT W/FRONT AND  
REAR ROCKSHAFT  
SERIAL NO. 000101 AND UP

MODEL NO. 931018 S-16  
HYDRAULIC LIFT W/FRONT AND  
REAR ROCKSHAFT  
SERIAL NO. 000101 AND UP

MODEL NO. 931015 S-18  
HYDRAULIC LIFE W/FRONT  
ROCKSHAFT AND REAR P.T.O.  
SERIAL NO. 000101 AND UP

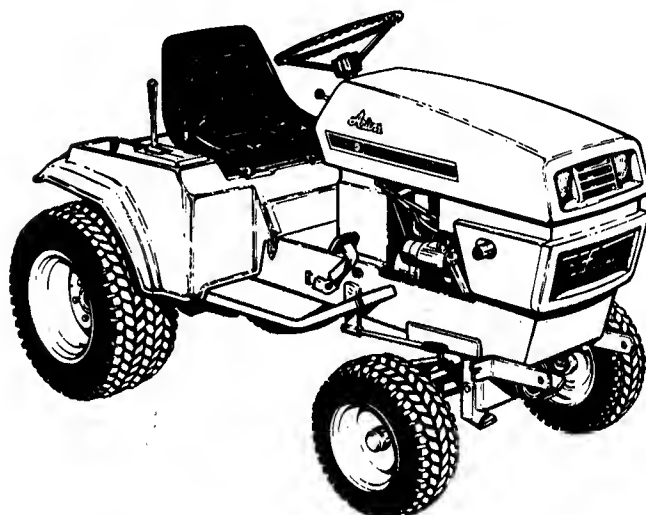
Part No. 31975

# *Ariens*

## 12·14·16·18 HP

### HYDROSTATIC

## Garden Tractors



**ARIENS COMPANY**



**BRILLION, WIS. 54110**

**NEUTRALIZE**

**P E D A L**

**STARTING PROCEDURE**

1. Place control lever in Park Start
2. Push implement power switch off
3. Advance throttle to 1/3 position
4. Pull out choke knob
5. Turn key switch fully to right
6. Release key and push choke in when engine starts

**B R A K E**

To move tractor with engine stopped, depress two valves on top of transmission and secure with retaining bar.

**+ CAUTION**

Before dismounting, place control lever in Park Start, shut off implement power and engine and remove key.

Maintain proper transmission oil level to prevent transmission damage and loss of dynamic braking control.

Keep all shields in place.

78309

**RESET**

**IMPL. POWER ON**

**Ariens**

**FAST**

**PULL FOR CHOKE**

**SLOW**

**PULL FOR FRT-CTR IMPL. POWER**

**IGNITION**

DASH PANEL - 78341

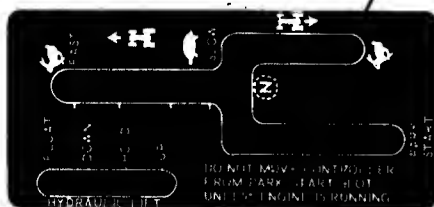
DASH PANEL - 78465 (S-18H ONLY)

**PULL FOR REAR IMPL. POWER**

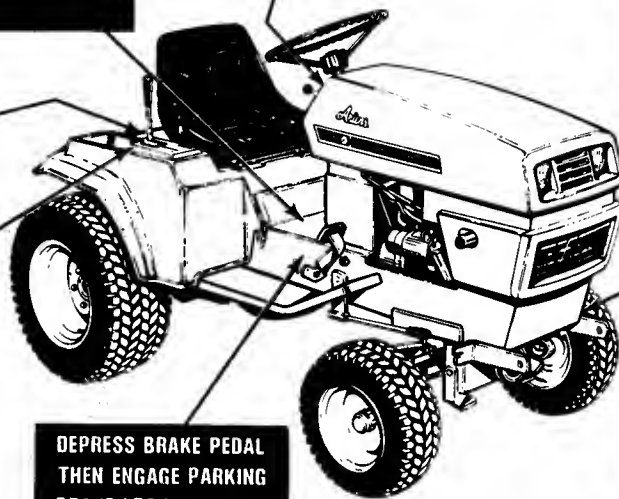
78466  
(S-18H ONLY)



78462 (S-18H ONLY)  
(UNDER REAR DECK)



CONTROL CONSOLE 78386



**DEPRESS BRAKE PEDAL THEN ENGAGE PARKING BRAKE LOCK. ENGAGED**

**DISENGAGED**

78311



78281

## INSTRUCTIONS FOR SAFE OPERATION

1. Know the controls and how to stop quickly. READ THE OWNER'S MANUAL.

2. Do not allow children to operate the vehicle. Do not allow adults to operate it without proper instruction.

3. Do not carry passengers. Keep children and pets a safe distance away.

4. Clear the work area of objects which might be picked up and thrown.

5. Disengage all attachment clutches and shift into park before attempting to start the engine.

6. Disengage power to attachment, stop the engine and place shift lever to "Park-Start" position before leaving the operator's position.

7. Disengage power to attachment and stop the engine before making any repairs or adjustments.

8. Disengage power to attachment when transporting or not in use.

9. Take all possible precautions when leaving the vehicle unattended, such as disengaging the power take-off, lowering the attachment, shifting into park, setting the parking brake, stopping the engine, and removing the key.

10. Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes; never across the face.

11. Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Exercise extreme caution when changing direction on slopes.

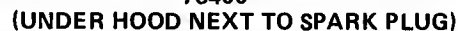
12. Stay alert for holes in the terrain and other hidden hazards.

13. Use care when pulling loads or using heavy equipment.

- a. Use only approved drawbar hitch points.
- b. Limit loads to those you can safely control.
- c. Do not turn sharply. Use care when backing.
- d. Use counterweight(s) or wheel weights when suggested in the owner's manual.

14. Watch out for traffic when crossing or near roadways.

78411 L.H. S-12H  
78410 R.H. S-12H



# CONTROLS

- ① **Implement Power Control Switch (Figure 1).** Pull the switch out (ON) to engage the electromagnetic clutch to drive the mower and front mounted attachments. (12, 14 and 16 H.P.)

**NOTE:** On 18 H.P. Tractor there are two switches. The extra switch controls the rear P.T.O. and attachments.

**NOTE:** These switches ① must be pushed in (OFF) to disengage the drive before the engine will start or to allow engine to keep running if the operator gets off the seat.

- ② **Implement Power Indicator Light (Figure 1).** This light glows red when either of the implement power control switches ① is pulled out to indicate that the attachment is engaged.

- ③ **Throttle Lever (Figure 1).** Raise the lever to increase engine speed. Lower the lever to decrease engine speed.

- ④ **Ignition Switch (Figure 1).** Turn the key fully clockwise to start the engine and release when the engine starts. Turn the key counterclockwise to stop the engine.

- ⑤ **Choke Control (Figure 1).** Pull choke control out when attempting to start a cold engine or when starting during cold weather. When engine starts, gradually push choke in. Normally, it is not necessary to use the choke when starting a warm engine.

- ⑥ **Light Switch (Figure 1).** Pull the switch out to turn on the front and rear lights. The ignition key must be turned on before the lights work.

- ⑦ **Seat Interlock Switch (Figure 1).** This switch, located in the seat, is actuated by the operators weight. If the operator leaves the seat for any reason while the PTO is "ON" or the shift lever is not in "PARK START" the PTO clutch and engine ignition are both shut off. When the PTO is "OFF" and the shift lever is in "PARK/START" leaving the seat will not cause the engine to stop.

- ⑧ **Hydraulic Lift (Figure 1)** This lever controls the hydraulic system used to raise and lower attachments. The lever has four positions – UP, HOLD, DOWN and FLOAT. The normal out-of-use position is the "HOLD" position. In this position the attachment will not raise or lower. When it is desired to raise the implement, move the lever to the "UP" position; to lower the attachment move the lever to the "DOWN" position. Place the lever in the "FLOAT" position to allow the attachments to follow the ground contours.

- ⑨ **Ammeter (Figure 1).** The ammeter indicates the rate of battery charge or discharge. The indicator should register on the (+) side of the dial when the engine is running at any speed above a slow idle. When the engine is idling or with a fully charged battery, the ammeter may not show charge. Should the ammeter register on the (–) side of the dial for an extended period of time with the engine running, it indicates the alternator is not charging the battery. Check the battery connections or contact your dealer.

- ⑩ **Hand Control Lever (Figure 1).** This lever regulates both tractor speed and direction. Move the lever for-

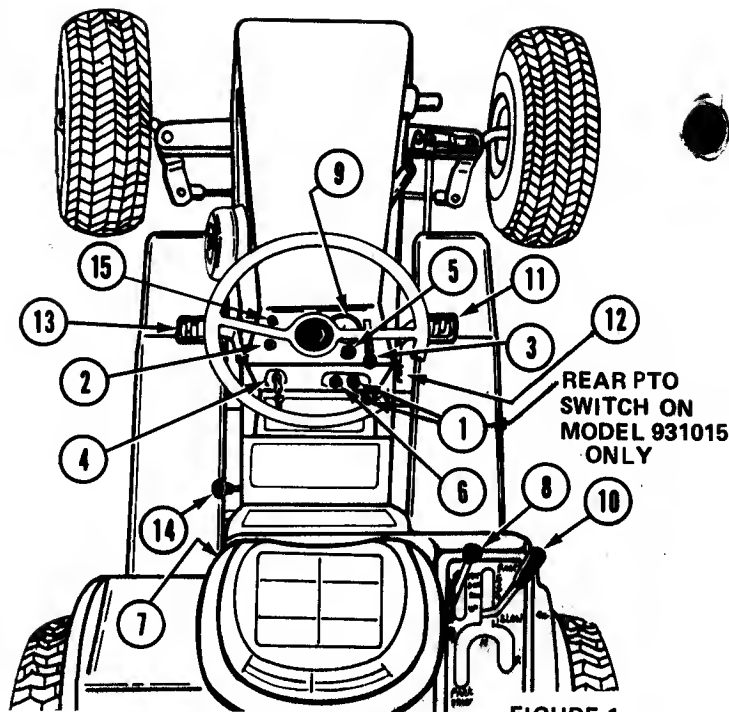


FIGURE 1

ward from neutral to increase the forward travel speed. Move the lever rearward to back the tractor and regulate reverse speed. Refer to Figure 2.

**NOTE:** This lever must be placed in the "Park-Start" position before engine will start or to allow engine to keep running when operator gets off seat.



**DO NOT MOVE CONTROL LEVER FROM "PARK-STOP" POSITION UNLESS ENGINE IS RUNNING.**

- ⑪ **Brake Pedal (Figure 1)** When this pedal is depressed the friction brakes will be applied to stop the tractor, DEPRESS THE NEUTRALIZER PEDAL ⑬ OR RETURN THE HYDRO STATIC CONTROL LEVER TO NEUTRAL BEFORE ATTEMPTING TO STOP THE TRACTOR.

- ⑫ **Parking Brake (Figure 1)** The parking brake is a latch that locks the brake pedal. To apply the parking brake, depress the brake pedal, flip up the parking brake latch. ⑫ To disengage the parking brake, depress the brake pedal and push down the latch.

- ⑬ **Neutralizer Pedal (Figure 1).** When this pedal is fully depressed the hand control lever will return to neutral and the forward or reverse motion of the tractor will stop. KEEP FOOT OFF PEDAL DURING NORMAL OPERATION OR WHEN MOVING THE HAND CONTROL LEVER. The pedal is an optional control for slowing down or stopping. Use of the pedal and hand control lever simultaneously can result in misadjusted hydrostatic linkage.

- ⑭ **Lift Selector -** Connects the hydraulic lift to front/center or rear rock shaft. See page 14 and Figure 27 for operation.

- ⑮ **Implement Reset Button -** Press to restart PTO in the event the operator leaves the seat momentarily. Under these conditions the PTO and engine ignition will be shut off. If the operator sits down before the engine stops revolving, the engine will restart, but the PTO will not start until the reset button ⑮ is pushed. If the engine stops, the normal starting procedure (Implement switches ① OFF; Hand Control Lever ⑩ in PARK START) must be followed.

# OPERATION

## PRE-STARTING INSPECTION

Prior to starting the engine for each day's operation, the following checks and services should be performed:

- Check oil in engine crankcase. Add oil as required to maintain proper level.
- Check fuel supply. Use regular gasoline only.
- Check air filter for excessive dirt. Clean as required.
- Make visual check with regards to safety precautions, obstructions, lubrication, and maintenance.

## STARTING THE ENGINE

Use the following procedure to start the engine:

- Place the hydrostatic control lever in the "Park-Start" position, shown in Figure 2.

**NOTE:** This is a safety feature. The engine will not start unless the control lever is pulled all the way to the rear of the "Park-Start" slot.

- Be sure the Implement Power Control Switch ① Figure 1, is pushed in (OFF).

**NOTE:** This is a safety feature. The engine will not start unless the switch is off (pushed in).

- Raise throttle lever ③ Figure 1, to approximately 1/3 fast position.
- Pull choke control ⑤ Figure 1, all the way out if engine is cold. If engine is warm, little or no choke may be required.
- Turn ignition key ④ Figure 1, clockwise all the way. Release key as soon as the engine starts and push choke button in. In cold weather it may be necessary to push choke in gradually until engine warms up. If engine fails to start on the first attempt, turn key to off, wait a few minutes and try again. Do not operate the starting motor continuously for more than 30 seconds at a time.

Always allow engine to warm up before applying load. In below freezing weather, allow engine to run at a fast idle for a period of at least 5 minutes before using the tractor. Serious internal damage to the engine and hydrostatic transmission could result if this procedure is not followed.

## OPERATING THE TRACTOR – CONTROL LEVER

When the hand control lever is placed in the "Park-Start" position as shown in Figure 2, a pin engages in the teeth on the reduction gear inside the rear axle housing. This mechanically locks the rear wheels and prevents them from turning. When the control lever is moved into the neutral (N) position, Figure 2, the pin is disengaged; however, the hydrostatic transmission will not allow the rear wheels to turn provided there is sufficient oil in the transmission and the free-wheeling valves are not depressed.

To move the tractor forward and to increase forward travel speed, gradually push the hand control lever forward in the slot from the neutral (N) position, shown in

Figure 2. To stop or slow down, gradually pull the control lever toward the neutral (N) position or depress the neutralizing pedal.

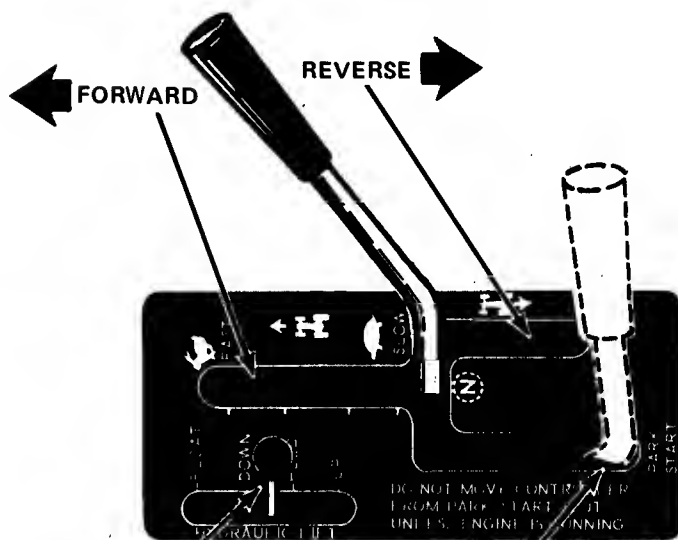
**NOTE:** The lines next to the forward slot do not indicate a given speed and serve as guide lines only.

To move the tractor backward and increase reverse travel speed, gradually pull the hydrostatic control lever back in the reverse (R) slot from the neutral (N) position, shown in Figure 2. To stop or slow down, gradually push the control lever toward the neutral (N) position or depress neutralizing pedal slowly with foot.

To stop the tractor, return the control lever to neutral either by hand or with the neutralizing pedal and then step on the brake to stop tractor from rolling.

**DO NOT MOVE CONTROL LEVER FROM "PARK-START" SLOT UNLESS ENGINE IS RUNNING..**

### CONTROL LEVER IN NEUTRAL (N) POSITION - TRACTOR STOPPED



### HYDRAULIC CONTROL LEVER

### CONTROL LEVER IN "PARK START" POSITION - TRACTOR PARKED OR STOPPED

FIGURE 2

Because of the dynamic braking characteristics of the hydrostatic transmission the control lever is extremely sensitive to the slightest movement when in the forward or reverse slots. Always move lever slowly when in these slots.

When the tractor is stopped on a hill or grade and the control in neutral, a slight amount of tractor movement is considered normal, if wheel brakes are not applied after neutralizing transmission speed control.

The forward travel speed of the tractor is infinitely variable from 0 to 6.8 mph. The reverse travel speed is infinitely variable from 0 to 3.2 mph with the engine running full throttle.

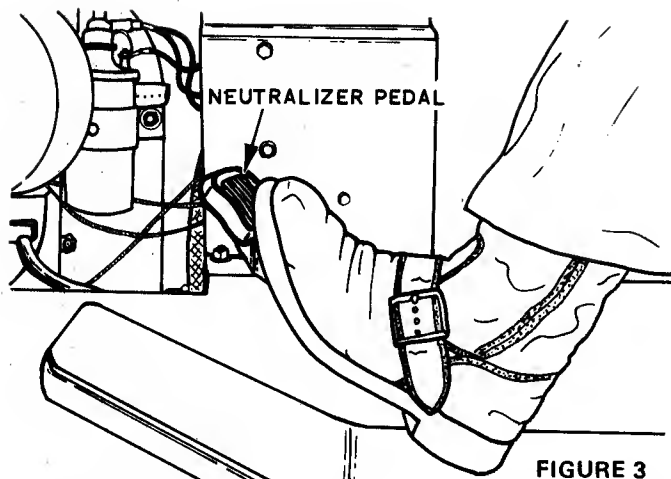


FIGURE 3

**NOTE: KEEP FOOT OFF PEDAL DURING NORMAL OPERATION OR WHEN MOVING THE HAND CONTROL LEVER. USE OF THE PEDAL AND HAND CONTROL LEVER SIMULTANEOUSLY CAN RESULT IN MIS-ADJUSTED HYDROSTATIC LINKAGE.**

#### THROTTLE LEVER SETTING

When operating power driven attachments such as the mower, snow thrower or the rotary tiller, run the engine at full throttle unless the attachment operator's manual specifies otherwise. Use the hand control lever, **not** the throttle lever to select a safe travel speed when using power driven attachments.

Safe or proper travel speed depends on the attachment used, the type of terrain and lawn, field or garden conditions in which the tractor is operated.

#### STOPPING THE TRACTOR

To stop the tractor, depress neutralizer pedal completely ⑪ or move control lever ⑩ to neutral, Figure 1, and depress the brake pedal. Then place the control lever in the "Park Start" position and set the parking brake. Figure 4.

#### EMERGENCY STOPS

For emergency or "panic" stops, the neutralizer pedal and brake pedal can be used, see Figure 3. When the neutralizer pedal is depressed, the control lever is shifted to the neutral (N) position from either the forward or reverse positions, then use the brake pedal to stop the tractor if motion continues.

**NOTE: Keep foot off neutralizer pedal when moving the hand control lever. Use of the neutralizer pedal and control lever simultaneously can result in mis-adjusted hydrostatic linkage. Become familiar with the use of the neutralizer pedal. Using the foot controlled neutralizing pedal for all slowing down and stopping operations will make emergency or "panic" stops become "automatic" by use.**

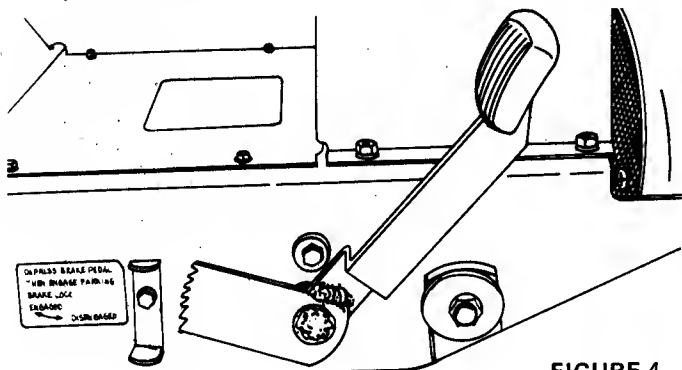


FIGURE 4

#### STOPPING THE ENGINE

Always use the following procedure to stop the engine:

1. Move the hand control lever ⑩ Figure 1, in "Park-Start" position and set the parking brake, Figure 4.
2. Disengage Implement Power Control Switches ① Figure 1, and driven attachments.
3. Lower attachment so that it is resting on the floor or ground.
4. Lower the throttle lever ③ Figure 1, and allow engine to idle for a short period before turning it off.
5. Turn the ignition key ⑥ Figure 1, counterclockwise to stop engine.



**IMPORTANT — Remove ignition key before dismounting from tractor. This will prevent children and inexperienced operators from starting the tractor.**

#### RAISING THE REAR DECK

The transmission and control linkage are readily accessible by raising the rear deck, shown in Figure 5. To raise the rear deck, place the hydrostatic control lever in the "Park-Start" position, release the two latches and raise the rear deck to its stop.

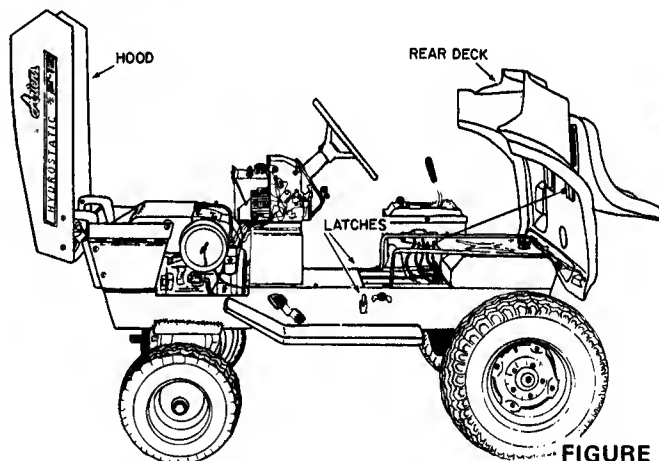


FIGURE 5



**CAUTION: Always shut off engine before raising the rear deck. Be sure to lock the rear deck down with the latches provided before operating the tractor.**

#### RAISING THE HOOD

The engine, battery and electrical components are readily accessible by raising the hood, see Figure 5. To raise the hood grasp each side and raise it up and forward to its stop.



**CAUTION: ALWAYS SHUT ENGINE OFF BEFORE RAISING HOOD. NEVER TOUCH MUFFLER, EXHAUST PIPE OR ENGINE UNTIL THEY HAVE HAD TIME TO COOL AFTER OPERATING THE ENGINE.**

#### FREE-WHEELING VALVE

The free-wheeling valves are located under the rear deck on top of the transmission, see Figure 6. These valves must be kept closed (buttons out) at all times except when it becomes absolutely necessary to push the tractor with the engine stopped. If this should happen, open the valves by pushing the buttons "IN", by rotating cam. See Figure 6.

Before attempting to push the tractor be sure the hydrostatic control lever is in neutral (N) and the free wheeling valves pushed in. If the lever is in the "Park-Start" position the rear wheels will be mechanically locked.

The tractor will not move under power unless the free wheeling valves are closed (button out), by rotating cam.

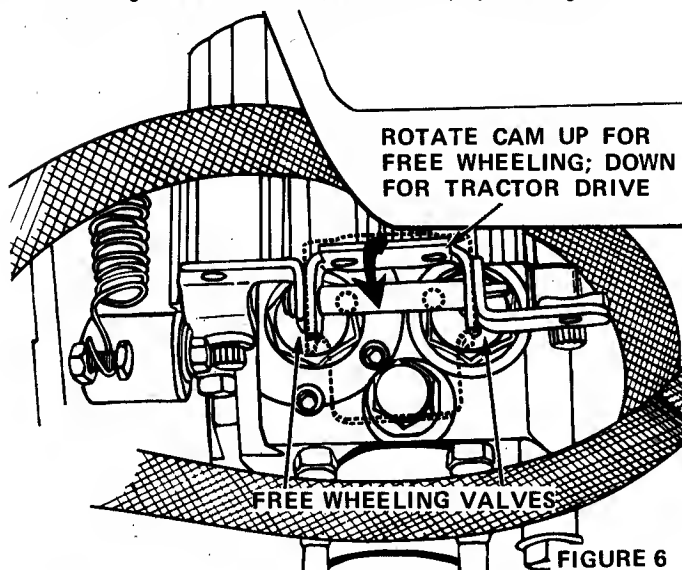


FIGURE 6



**IMPORTANT: DO NOT PUSH OR TOW TRACTOR LONG DISTANCES AS INTERNAL TRANSMISSION DAMAGE COULD RESULT. LOAD TRACTOR ON A TRAILER OR TRUCK WHEN MOVING LONG DISTANCES.**

## LUBRICATION

### FILLING THE TANK

The fuel tank filler cap is located behind the seat, see Figure 7. Wipe the dust and dirt from around the cap before removing it to prevent dirt from falling into the tank while filling. Use an approved gasoline container and keep it clean.

The fuel tank capacity is 4.5 U.S. gallons.

Use regular grade gasoline. Be sure the gasoline is clean and fresh. Do not use premium gasoline. Do not mix oil with gasoline.

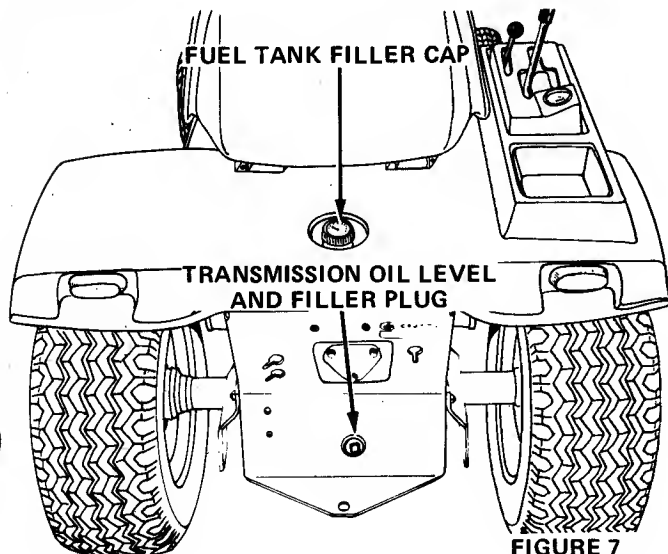


FIGURE 7

### ENGINE

Check the engine crankcase oil level daily or every 5 hours operation. It is essential that the oil level be maintained in the "safe" operating range as shown in Figure 8 at all times or serious engine damage could result.

To check the oil, stop engine and wipe all dirt and dust from around the dip stick, Figure 9. Pull dip stick out, wipe off the oil, re-insert dip stick and push it down tight. Pull the dip stick out and observe the oil level. Add sufficient oil of the proper viscosity to bring the oil up to the "fill" (F) mark, see Figure 8. Be sure tractor is level to correctly read dip stick.

### CHECK OIL LEVEL

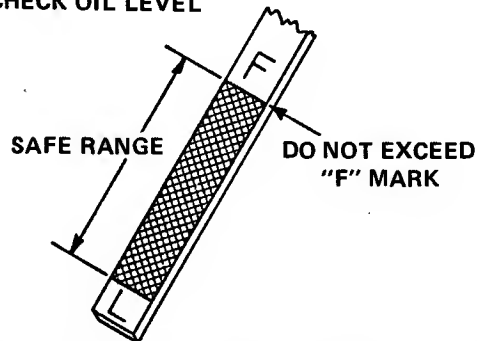


FIGURE 8

**DO NOT OVERFILL** — Oil level must never exceed full mark. Oil capacity of the engine crankcase is 4 U.S. pints.

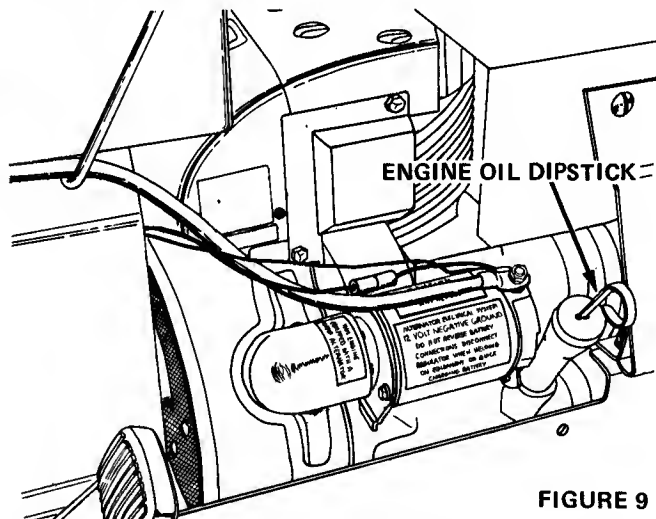


FIGURE 9

Use Ariens Gard-N-Yard oil (SAE 10W-30 SE classification) when using lawn and garden attachments. Use Ariens Sno-Thro oil (SAE 5W-20 SE classification) when using snow removal attachments.

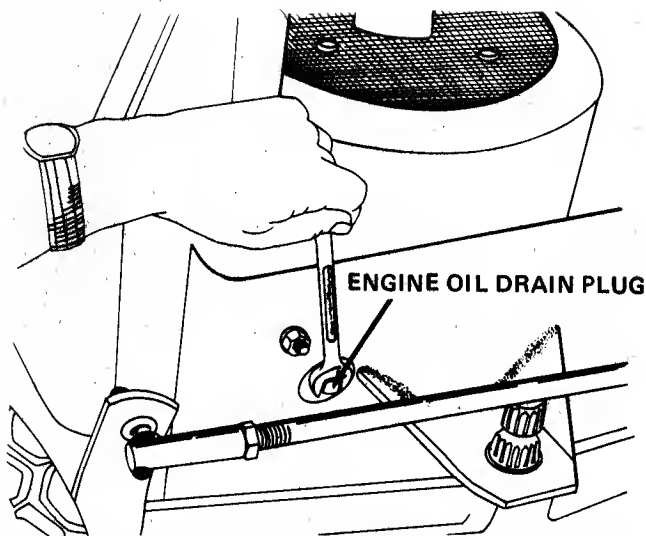
### CHANGE ENGINE OIL

When the tractor is new, the oil should be changed after the first 5 hours of operation.

Under normal operating conditions, the oil should be changed every 25 hours of operation. If extremely dusty or dirty conditions prevail, change oil more frequently. See Engine Owner's Manual.

Drain the crankcase by removing the drain plug, shown in Figure 10, and allow the oil to drain into a container. If possible, run engine just prior to changing oil, as the oil will flow more freely and carry away more contamination when hot.





NOTE: Bottom of engine shown. FIGURE 10

Replace drain plug. Remove dip stick and refill crankcase with 4 U.S. pints of oil. Check oil on the dip stick to see that the oil level is at the full (F) mark. Do not overfill.

### TRANSMISSION OIL GRADE AND VISCOSITY

Ariens Gard-N-Yard 10W-30 or an equivalent detergent type motor oil meeting the requirements of the American Petroleum Institute (A.P.I.) Service Classification SE should be used. Oil viscosity (weight) should be SAE 10W-30 and is recommended for year-round use.

### TRANSMISSION OIL LEVEL

The hydrostatic transmission, differential and hydraulic lift system all operate from a common oil reservoir. Note that the rear end is the oil reservoir. The oil level in the reservoir should be checked every 25 hours of operation or monthly.



**CAUTION:** Proper oil level is essential for proper operation and protection against severe damage to the transmission as well as dynamic braking.

Use the following procedure to check the transmission oil level:

1. Drive tractor onto level ground.
2. On tractors with hydraulic lift systems, move hydraulic control lever to the "DOWN" position until the lift cylinder is fully retracted.
3. Move control lever to park start, keeping engine at fast idle.
4. Wipe dirt from around the oil level and filler plug. See Figure 7.
5. Remove plug. Oil level should be to the top of the pipe elbow at the filler plug, see Figure 11.
6. If necessary, use a small funnel to add sufficient SAE 10W-30 with SE classification motor oil to bring the oil up to the proper level. Replace plug.

Be very careful to prevent dirt and foreign materials from entering the oil reservoir when checking or adding oil.



### CHANGE TRANSMISSION OIL FILTER

When the tractor is new, change the filter after the first five (5) hours of operation.

Thereafter, the filter should be changed every 100 hours or annually, whichever comes first. It is not necessary to change the transmission oil.

Use the following procedure to change the transmission oil filter.

1. Drive the tractor onto level ground. Place a container under the filter to catch oil spillage as filter is removed.
2. Unscrew and discard oil filter. Use an oil filter removal tool if necessary.
3. Moisten the rubber gasket with oil and install the filter.
4. Start engine and cycle the hydraulic lift until it operates smoothly. This bleeds the air out of the transmission. Check for leaks.

### TRANSMISSION OIL FILTER

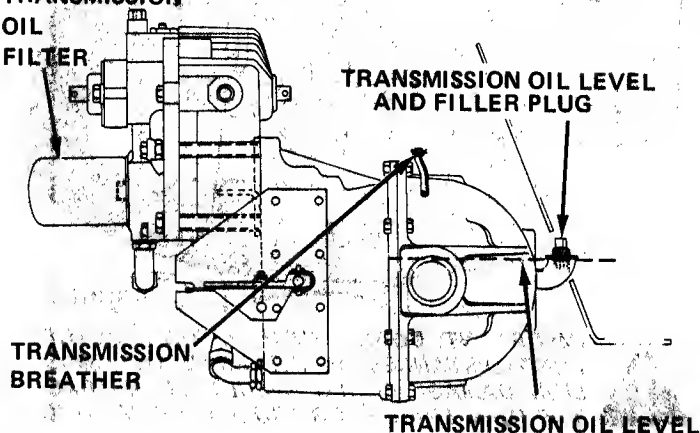


FIGURE 11

5. Move control lever to park start, keeping engine at fast idle.

6. Wipe dirt from around the oil level and filler plugs. See Figure 8. Remove plug.

7. Add sufficient SAE 10W-30 motor oil so that the oil fills the elbow. Install the filler plug.

Be very careful to prevent dirt and foreign materials from entering the reservoir or oil filter when changing the oil and filter.

Be sure breather is not clogged. Wipe clean with a rag and solvent. See Figure 11.

### GREASE STEERING SYSTEM

Under normal conditions the steering system should be lubricated every 50 hours of operation or quarterly whichever occurs first. The following list of grease fittings are identified in Figure 12. Wipe each fitting clean before and after lubrication! Use a good grade of general purpose grease such as Ariens Multi-Purpose grease.

Rotate steering wheel clockwise until the spindle arm contacts the axle stop and fill gearbox until grease is forced out around the cam follower adjusting screw.

- |                     |                     |
|---------------------|---------------------|
| ① Steering gearbox. | ⑤ Right king pin.   |
| ② Left king pin.    | ⑥ Front R.H. Wheel. |
| ③ Front L.H. Wheel. |                     |
| ④ Axle pivot.       |                     |



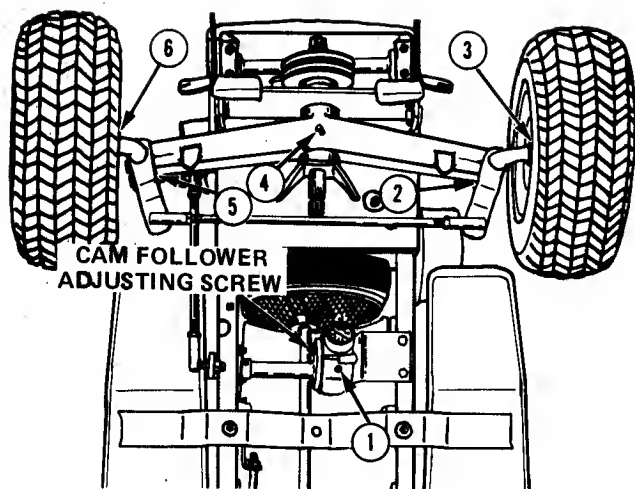


FIGURE 12

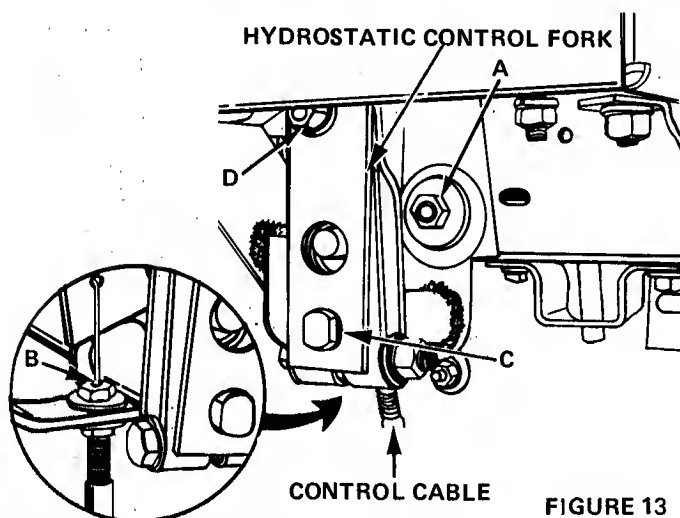


FIGURE 13

#### OIL HYDROSTATIC CONTROL LINKAGE

1. Oil the roller in the cam slotted plate shown in Figure 18 with a few drops of light oil every 25 hours of operation or monthly.
2. Oil control cable B, Figure 13.
3. Periodically oil hydrostatic control pivot shaft at Point C, Figure 13.
4. Periodically lubricate all lift linkage pivot areas.

## MAINTENANCE



**NOTE THAT ALL ENGINE SERIAL NUMBERS HIGHER THAN THOSE LISTED BELOW HAVE A GOVERNOR SETTING OF 3250 RPM, NO LOAD ( $\pm 75$  ROM). IDLE SET AT 1600 RPM, NO LOAD.**

12 H.P.	MODEL NO. K301S	SERIAL NO. 8173991
14 H.P.	MODEL NO. K321S	SERIAL NO. 8117916
16 H.P.	MODEL NO. K341S	SERIAL NO. 8119833
18 H.P.	MODEL NO. K361QS	ALL ENGINES

#### HOURLY METER

The hour meter is standard equipment on the Model 931015 and is available as an optional accessory for all other models.

The hour meter is located under the engine hood, on the right side, just ahead of the dash panel. The hour meter will record the actual time the engine operates. Keep a record of hour meter readings in order to perform Maintenance and Lubrication services at the recommended hourly intervals.

#### AIR FILTER SERVICE

Check the air filter daily or every 5 hours of operation. When operating in extremely dusty conditions, check the air filter daily. A pre-cleaner is available. Consult the engine manual.

To clean the cartridge, remove the wing nut and the cover, shown in Figure 14, and then remove the cartridge. Gently tap the cartridge on a flat surface. Do not use any liquid cleaner to wash cartridge. Do not use compressed air to remove dirt as this may rupture the cartridge.

Examine cartridge carefully and replace it with a new one if it is bent, crushed or if there is a noticeable loss of power. Re-assemble cartridge and cover making sure it seats around the back plate. Install wing nut and tighten finger tight.

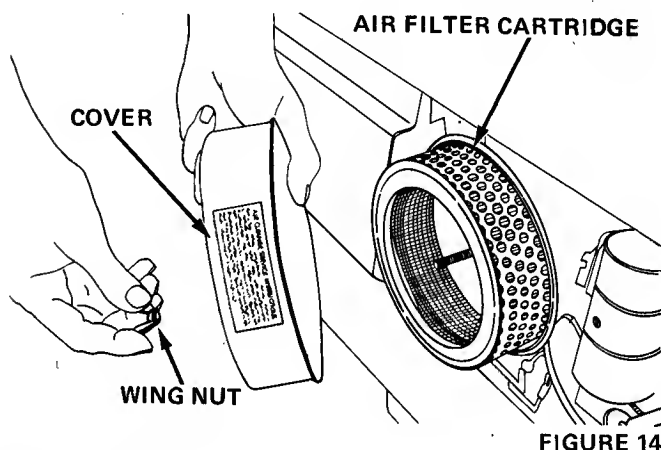


FIGURE 14



**IMPORTANT:** Do not run engine with air filter removed.

#### BATTERY SERVICE

Check the battery electrolyte level once each month. Add distilled water to bring the level to the bottom of the split ring in the filler tube of each cell.

Each spring and fall remove corrosion from the terminals and apply a light coat of grease to the terminals. Keep battery cables securely tightened to terminals and be sure battery is properly fastened down in battery holder at all times. Keeping battery clean will prolong battery life.

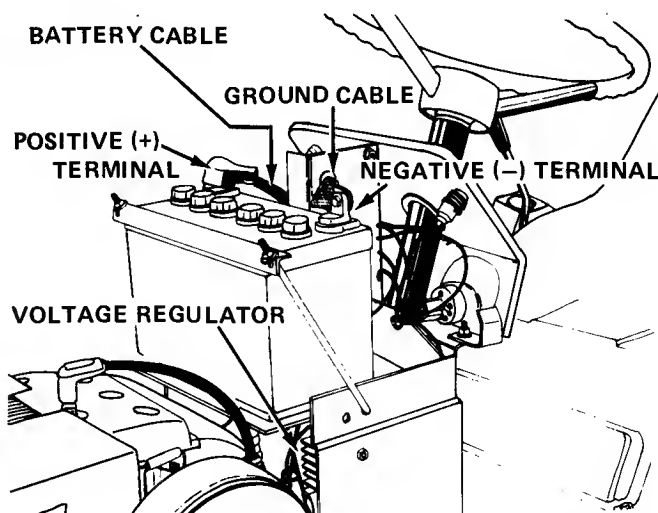


FIGURE 15



**CAUTION:** Storage batteries give off highly inflammable hydrogen gas. Do not allow sparks or flame near battery. Do not lay tools across battery terminals which may cause a spark resulting in an explosion.

Maintain the battery at full charge during storage and during winter months to prevent freezing. When water is added during freezing weather, run the engine at least one hour to thoroughly mix the water and electrolyte.

When installing the battery, make certain that the ground cable is connected to the negative (—) terminal on the battery, see Figure 15. Be sure the battery cable is connected to the positive (+) terminal.



**WARNING:** Reversed battery cables or reversed cables from a battery charger or booster battery can cause damage to the regulator rectifier (Figure 17). Always disconnect plug from the regulator rectifier before using a charger, booster battery or when electric welding is done on the tractor.

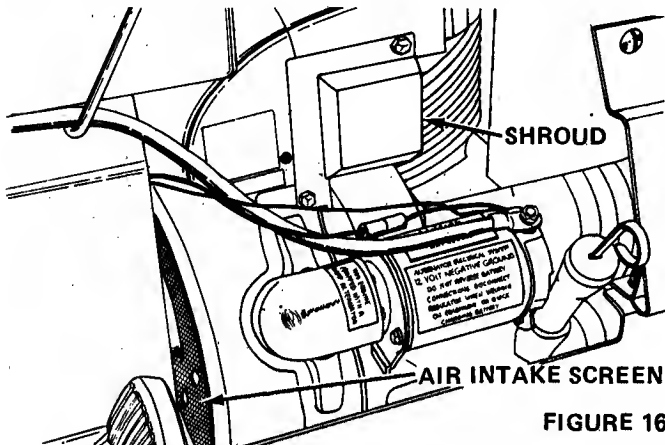


FIGURE 16

The engine is air cooled. Air must circulate freely around the engine from the air intake screen shown in Figure 16 and over the cooling fins in the cylinder head and block to prevent overheating.

Every 50 hours of operation or quarterly check the air intake screen. Wipe away any dirt or debris which has collected on the screen. Remove the shroud, Figure 16 and inspect the cooling fins. Remove any dirt, or chaff accumulations from the cooling fins with compressed air. Replace shroud.

#### TRANSMISSION COOLING

Dirt and grime accumulations on transmission cooling fins can cause overheating. Check and clean the cooling fins every 50 hours of operation or quarterly.

Be sure transmission cooling fan is in good condition.

#### TIRE PRESSURES

Check tire pressure at least once each month. Inflate tires to pressures shown in the chart below. Use a low pressure tire gauge for accurate readings.

TIRE SIZE	LOADING		
	Light	Medium	Heavy
Front 16 x 6.50 x 8	(Lawn Work) 8 p.s.i.	(Sno - Thro) 12 p.s.i.	16 p.s.i.
Rear 23 x 10.50 x 12	(Lawn Work) 6 p.s.i.	(Rotary - Tiller) 8 p.s.i.	10 p.s.i.

Keep tires properly inflated at all times. Over-inflation will cause operator discomfort. Under-inflation will cause short tire life. Always see that the tire valve caps are in place and securely tightened to prevent air loss.

#### FUEL PUMP AND FILTER

The engine may fail to start due to lack of fuel at the carburetor if the fuel pump shown in Figure 17 loses its prime. This can occur when the fuel tank is run dry or may be due to evaporation of fuel from the system after a storage period. In either case, make certain there is fresh fuel in the tank and operate the priming lever on the fuel pump several times to start fuel flow.

If a faulty fuel pump is suspected, see your Ariens dealer.

When dirt or other foreign material is allowed to enter the fuel tank it will collect in the fuel filter shown in Figure 17. This will eventually cause fuel stoppage. The filter can be disassembled and cleaned.

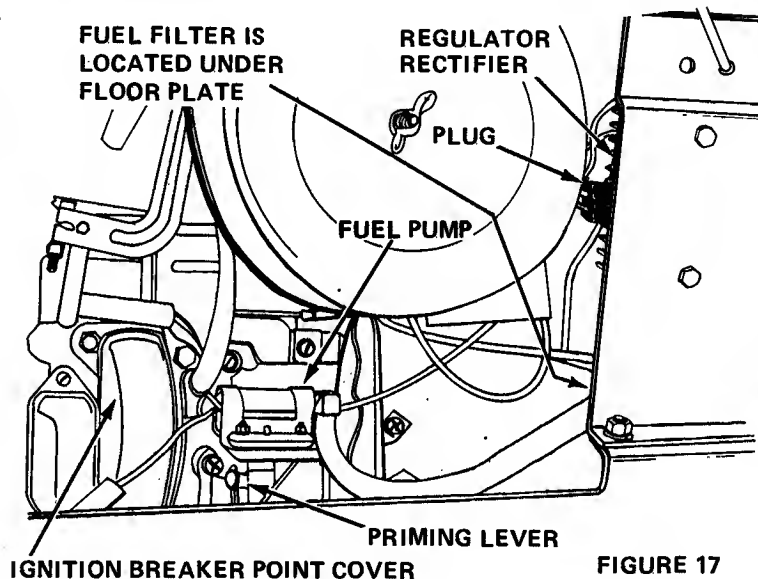


FIGURE 17

#### LUBRICATION AND PERIODIC SERVICE SCHEDULE

Hours of Operation/ Time Interval	Service Required
Every 5 Hours or Daily	Check Engine Crankcase Oil Service Engine Air Filter
Every 25 Hours or Monthly	Service Battery Check Tire Pressures Check Transmission Oil Level Change Engine Oil Clean Park Lock Assembly Oil Hydrostatic Control Linkage Oil Park Lock Control Cable
Every 50 Hours or Quarterly	Grease Steering System Clean Engine Cooling Fins Clean Transmission Cooling Fins Check Spark Plug
Every 250 Hours or Yearly	Clean Fuel Filter

**NOTE:** When tractor is new, change the engine oil and the transmission oil filter after the first five hours of operation.

# ADJUSTMENTS

Ariens dealers will provide any service which may be required to keep the tractor operating at peak efficiency. The tractor is equipped with the finest quality engine obtainable. However, should servicing be required, it can be obtained from an Ariens dealer or an authorized engine manufacturer's service station. Consult your Ariens dealer for details.

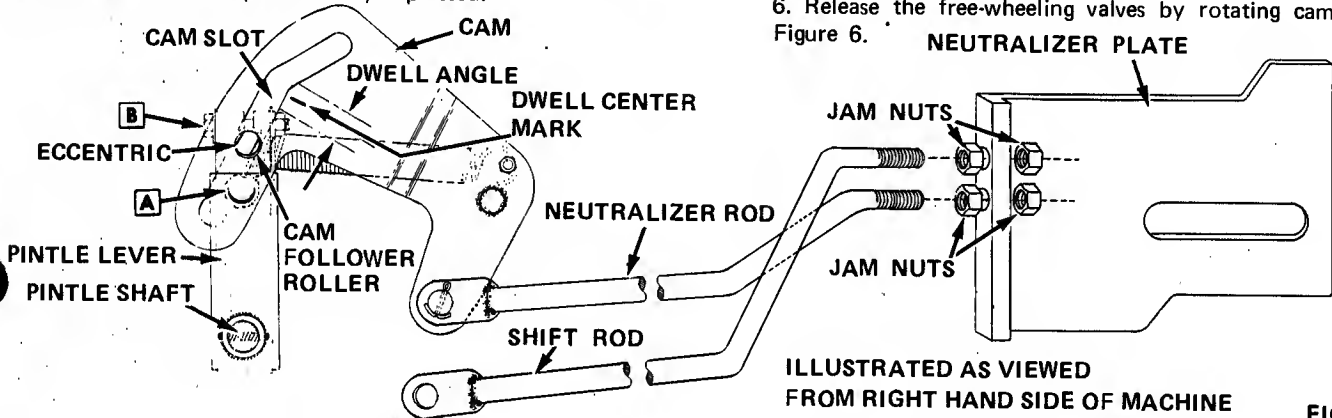
## SEAT ADJUSTMENT

The seat is adjustable forward and backward to seven positions. To adjust seat position, grasp seat back and raise seat. Slide the seat forward or backward as required to the most comfortable position.

## HYDROSTATIC CONTROL ADJUSTMENT

If the tractor creeps when the hydrostatic control lever is in the neutral (N) position on the control console, make the following adjustment:

The hydrostatic controls should be adjusted so the tractor does not creep forward or backward when the control lever is in the neutral (N) slot in the control console as shown in Figure 2. In addition, the control lever should automatically be shifted to this position from either "forward" or "reverse" when the neutralizer pedal is fully depressed.



1. Jack up the rear of the tractor until the drive wheels clear the ground and **BLOCK SECURELY**. Wheels must be free to revolve.
2. With the control lever in "park-start" position, raise the rear deck. Activate seat switch to allow engine to start.
3. Start engine; place control lever in the neutral position and increase engine speed to full throttle.
4. Loosen clamp bolt B, Figure 18 a sufficient amount to allow the cam follower to rotate. Turn the eccentric "clockwise" or "counter-clockwise" as required until the rear tractor wheels completely stop. Retighten clamp bolt B.

Check adjustment by moving the control lever to both forward and reverse positions several times. Each time the lever is returned to neutral, the rear wheels should stop completely if they drift, re-adjust the eccentric until a true neutral position is found.



**CAUTION: USE EXTREME CAUTION WHEN ADJUSTING THE HYDROSTATIC LINKAGE WITH THE ENGINE RUNNING DUE TO THE ROTATING DRIVE SHAFT COUPLING AND FAN.**

If a positive neutral cannot be found by adjusting the eccentric, it will be necessary to adjust the hydrostatic linkage using the following procedure:

1. Use steps 1 and 2 of the previous procedure.



**CAUTION: REAR AXLE MUST BE RAISED AND BLOCKED SECURELY SO THAT REAR WHEELS ARE FREE TO REVOLVE.**

2. Loosen clamp bolt B, Figure 18 and rotate the eccentric until the flats on the eccentric are parallel to the cam slot as shown in Figure 18. Retighten bolt B. This will assure a maximum fine adjustment range.
3. With the control fork, Figure 19, move the cam, Figure 18, until the cam follower roller is lined up with the cam dwell center mark. **DO NOT** adjust the hydrostatic control fork, Figure 19, if the control lever is not in the neutral slot of the console. This is the final adjustment to be made.
4. Depress free-wheeling valves by rotating cam up. See Figure 6.
5. Loosen pintle lever clamp bolt A, Figure 18, a sufficient amount to allow the pintle lever to move freely. Move the hydrostatic control lever, Figure 19, in the park-start position, start the engine and run at idle. Return the control lever to the neutral slot in the control console.
6. Release the free-wheeling valves by rotating cam down, Figure 6.

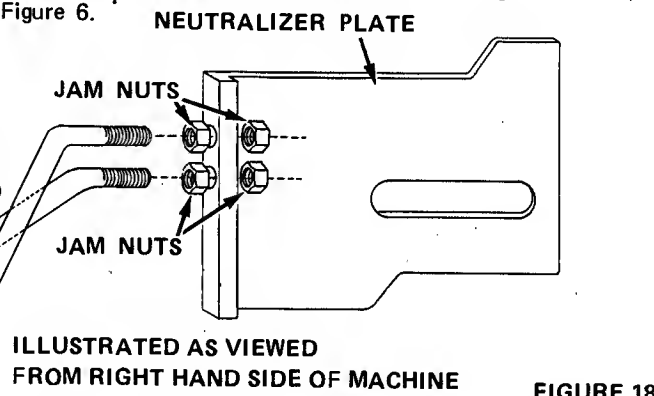


FIGURE 18



**CAUTION: WHEELS MAY TURN WHEN FREE-WHEELING CAM IS RELEASED. KEEP ARMS AND LEGS CLEAR AT ALL TIMES.**

Check that the cam follower roller is lined up with cam dwell center mark. Move the pintle arm back and forth until wheels stop turning. Carefully tighten bolt A, Figure 18. The neutral adjustment is extremely sensitive and this procedure is a coarse adjustment. If, when bolt A is tightened, the wheels still move slowly, the fine tuning will be done in step 9.

7. Loosen (4) jam nuts on neutralizing plate, Figure 18, and depress neutralizer pedal completely, Figure 3. The cam follower roller, Figure 18, should remain in line with the cam dwell center mark. Snug (4) jam nuts up against neutralizer plate. Release pedal and securely tighten jam nuts.
8. Check the hydrostatic control lever. If the neutralizer pedal does not automatically shift the control lever to the neutral position from either "forward" or "reverse" when the pedal is fully depressed, loosen hydrostatic control fork adjustment bolt D, Figure 19. Move the fork so that it aligns with the neutral slot in the control console. Securely tighten bolt D.
9. If the wheels still move slowly when neutralized, increase the engine speed to full throttle. Loosen clamp bolt B, Figure 18 and adjust the eccentric roller until the wheels stop completely. Tighten clamp bolt B, Figure 18.

## CONTROL LEVER FRICTION ADJUSTMENT

The hydrostatic friction plates, shown in Figure 19, must be adjusted so the control lever moves through the "forward" and "reverse" modes with a minimum of force. However, there must be sufficient spring pressure on the friction plates so that, under normal operating conditions, the control lever will remain at any selected setting.

If the tractor has a tendency to slow down or speed up without touching the control lever, it will be necessary to increase the spring pressure on the friction plates by tightening the screws at A and B, Figure 19. Access to these screws can be gained by raising the rear deck of the tractor and inserting a screw driver through the access holes as shown.

If the tractor has a tendency to speed up, tighten screw A slightly more than screw B.

If the tractor has a tendency to slow down, tighten screw B slightly more than screw A.

**NOTE:** The control console, see Figure 19, has been removed for clarity only.

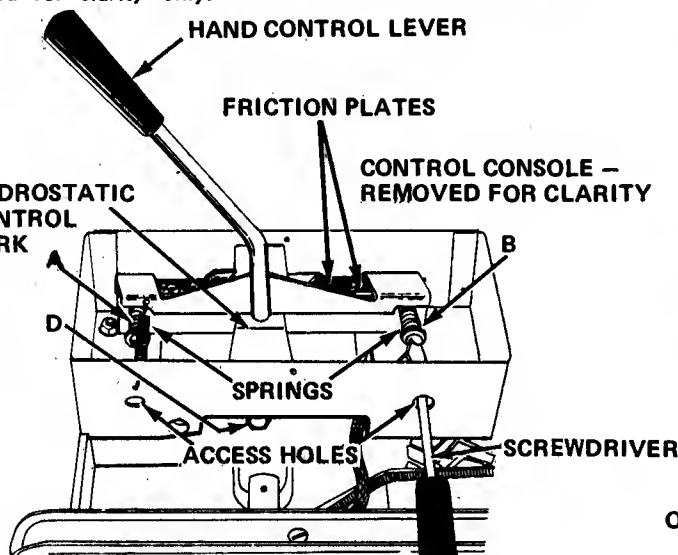


FIGURE 19

## PARK LOCK MAINTENANCE AND ADJUSTMENT

When the hydrostatic control lever is placed in the "park-start" position, the cable shown in Figure 20 is pushed out of the cable housing causing the pivot plate to rotate in the direction of the arrow. This results in the park-lock pin engaging in a reduction gear in the differential housing which locks the rear wheels. When the control lever is moved forward, the pivot plate rotates opposite to the direction of the arrow shown in Figure 20 and the park-lock pin disengages from the reduction gear thus unlocking the rear wheels.

The park-lock mechanism should be kept clean of any dirt or grass build-up and the moving parts should be oiled occasionally to assure that the park-lock functions properly.

The park-lock mechanism is properly adjusted when the over-center latch pin, Figure 20 actuates at Point C, Figure 21 (approximately 1/2 to 2/3 the length of the slot on the console cover), as the control lever is moved from the front of the slot back into the park-start position. A distinct "click" can be heard when the over-center latch actuates.

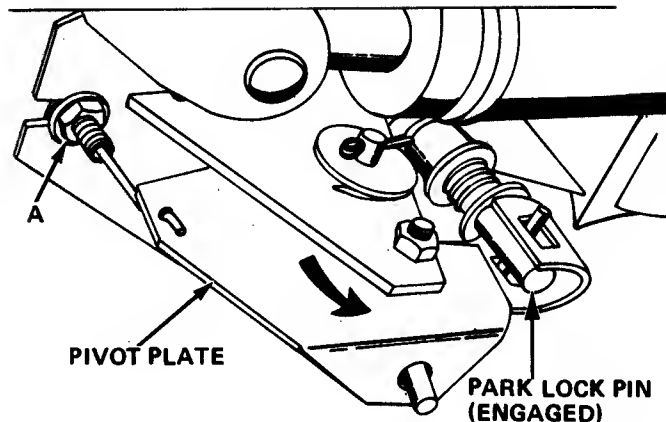


FIGURE 20

When the mechanism is properly adjusted, the park-lock pin will engage the teeth of the reduction gear when the control lever reaches Point B, Figure 21, and the pin will be completely disengaged at Point A.

Adjustment is made by loosening nuts A, Figure 20, and moving the cable housing "in" or "out" until the over-center latch actuates when the control lever reaches Point C, Figure 21, as the lever is moved from the front of the slot, rearward into the park-start position. Moving the cable housing "in" toward the tractor causes the park-lock pin to engage later. Moving it "out" away from the tractor causes the pin to engage earlier in the reduction gear.

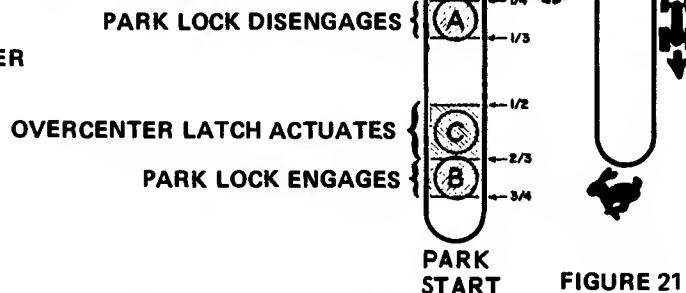


FIGURE 21

## PARK LOCK BRAKE ADJUSTMENT

The park lock brake must be adjusted to hold the control lever at the rear of the "park-start" slot in the console. Otherwise, while starting the engine, the control lever will need to be held back to fully depress the safety switch located under the console cover.

The "park-lock" brake is adjusted by tightening or loosening nut A, Figure 20.

## FRONT WHEEL TOE-IN ADJUSTMENT

Proper toe-in of the front wheels is necessary to ensure proper steering and to reduce tire wear. The proper amount of toe-in is when the front of the wheels are 1/16" to 1/8" closer together than the rear of the wheels, measured at the horizontal centerline of the rim flange.

If the steering develops a wandering characteristic or if excessive tire wear develops, the toe-in of the front wheels should be checked. If the toe-in is incorrect, adjust as follows:

1. Loosen jam nuts A and B, Figure 23.
2. Rotate tie-rod until toe-in is correct. Shorten tie-rod to decrease toe-in. Lengthen it to increase toe-in.
3. Tighten jam nuts A and B after correct toe-in is obtained.

### BRAKE ADJUSTMENT

The tractor brakes will require adjustment when the brake pedal depresses over two inches. To adjust the brakes proceed as follows:

1. Block up the rear of the tractor with the wheels off the ground.
2. Remove the wheel lug nuts and remove the wheel.
3. Insert a screw driver in the slot in the brake drum (See Figure 22) and tighten the star washer until the brakes are snug and the drum does not turn. Back off the star washer one full turn.
4. Replace the wheel and secure with the wheel lug nuts.  
Repeat adjustment on the opposite wheel.

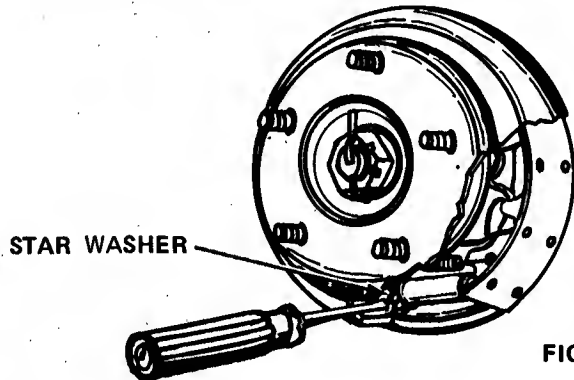


FIGURE 22

### STEERING GEAR ADJUSTMENT

If excessive looseness is noticed in the steering system after continued use, the steering gear may require adjusting to remove excessive backlash between the gears. Adjust steering gear using the following procedure:

1. Raise front of tractor so that the tires clear the ground.
2. Remove cotter pin identified in Figure 23.
3. Loosen jam nut C, Figure 23 and turn adjusting screw out (counter-clockwise)  $1\frac{1}{2}$  turns.
4. Tighten adjusting plug, Figure 23, to 10-14 ft. lbs. of torque.
5. Rotate adjusting plug out slightly to align nearest slot in the plug with the cotter pin hole and reinstall the cotter pin.
6. Hold jam nut and turn adjusting screw, Figure 23, clockwise (in) until backlash is removed from steering wheel. **DO NOT FORCE ADJUSTING SCREW.** Torque jam nuts 35-45 ft. lbs. while holding adjusting screw in position.
7. Turn steering wheel from lock to lock and check for binding or dragging inside gearbox. If any binding or dragging exists, it will be necessary to loosen the adjusting screw and/or the adjusting plug slightly until steering wheel turns freely with no excessive looseness.

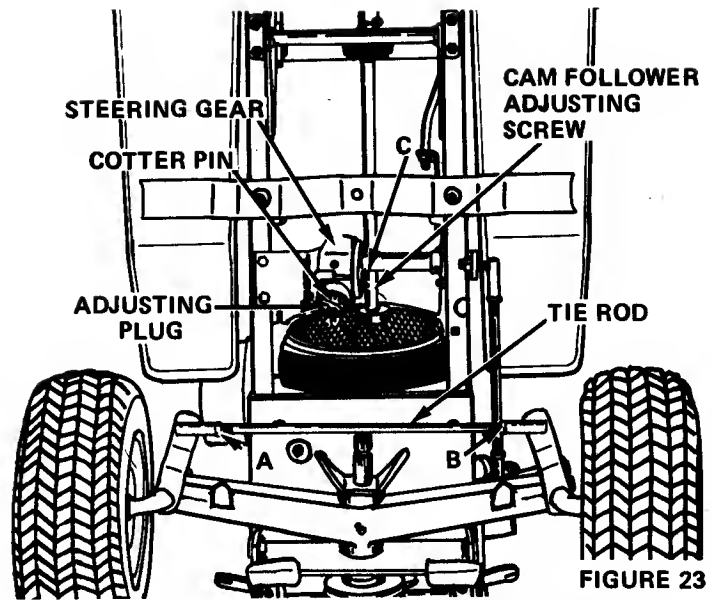


FIGURE 23

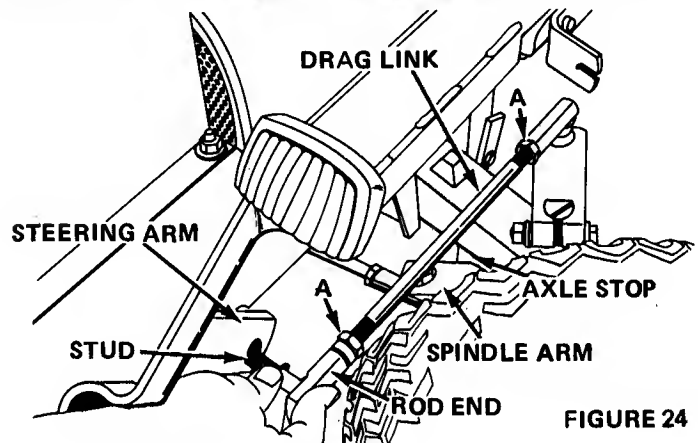


FIGURE 24

### STEERING STOP ADJUSTMENT

When making a full right hand turn, the spindle arm should contact the axle stop as shown in Figure 24. When making a full left hand turn, the left spindle arm should contact the left axle stop. Proceed as follows to adjust the steering stops after checking toe-in.

1. Rotate front wheels to the right until right spindle arm contacts the axle stop, Figure 24.
2. Remove drag link rod end from steering arm, Figure 24, and loosen jam nuts A.
- 2a. Rotate steering wheel clockwise until steering gear bottoms. Back off  $1/8$ - $1/4$  turn counter clockwise.
3. Rotate drag link as required while preventing the loose rod end from turning until the stud is approximately  $1/2$  hole to the rear of hole in steering arm, Figure 24. Be sure axle stop contacts steering arm.
4. Reinstall rod end stud in steering arm and tighten jam nuts A.
5. Rotate wheels completely to the left. The left spindle arm should contact left axle stop. If it does not, repeat step 2 and shorten drag links slightly until both spindle arms contact their respective axle stops when making full turns in either direction. The steering gear should not bottom before the spindle arm contacts the axle stop.

## REAR WHEEL TREAD ADJUSTMENT

The rear wheels are normally assembled in the narrow tread position, shown in Figure 25. The wheels can be turned on the hubs for a wider tread. The wide tread provides greater stability on hillsides and on rough terrain.

Remove the wheel lug nuts, turn the wheels around with the valve stems inward and re-assemble on the hub.

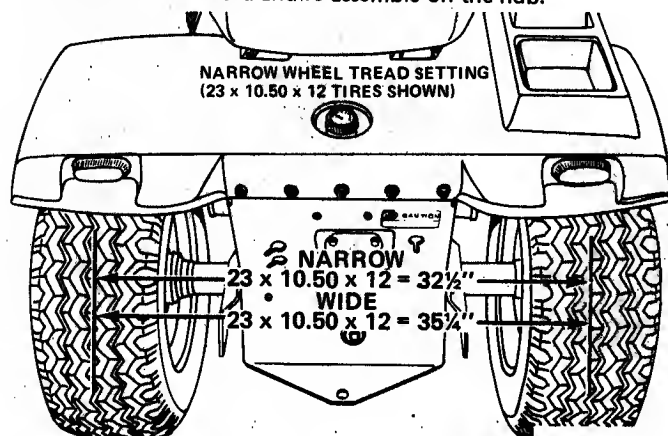


FIGURE 25

If Chevron tread tires are used, remove the wheel lug nuts and re-assemble the wheels on opposite sides of the tractor with the valve stems turned inward. Interchanging the wheels is necessary to maintain proper direction of rotation for traction tires.

## HYDRAULIC LIFT OPERATION

The hydraulic control lever is located on the control console, shown in Figure 2. It is a four position lever to perform four functions, UP, HOLD, DOWN and FLOAT. The normal out-of-use position is the "HOLD" position and the attachment will not lower or raise. When it is desired to raise the attachment, the lever is pulled to the "UP" position and the cylinder is actuated to lift the attachment. When the lever is moved to the "DOWN" position, the oil pressure in the cylinder is reversed and the cylinder forces the attachment down.

When an attachment is being used which is designed to follow ground contours, the lever should be placed in the "FLOAT" position. The cylinder is then free to move as the attachment position requires.

Figure 28 shows the components of the hydraulic lift system. The hydrostatic transmission charge pump supplies the oil flow from the rear axle transmission oil reservoir. Oil flow to and from the cylinder is controlled by the valve. The back end of the cylinder is anchored to the rear rock shaft. The forward end of the cylinder is pinned to the lower end of the bell crank.

When the cylinder is extended or retracted, the bell crank pivots and raises or lowers both the front and center rock shafts at the same time through the front and center rock shaft linkages shown in Figure 28. The connection to the center rock shaft is made through the slotted hole which allows the center rock shaft to move up and down, allowing the mower to float independent of the flotation provision in the hydraulic system.

The center rock shaft flotation spring provides mower flotation. The tension on the spring can be increased by pulling the chain shown in Figure 26 and latching a chain link in the notch in the back of the tractor frame. This spring should always be in use when the mower pan is used.

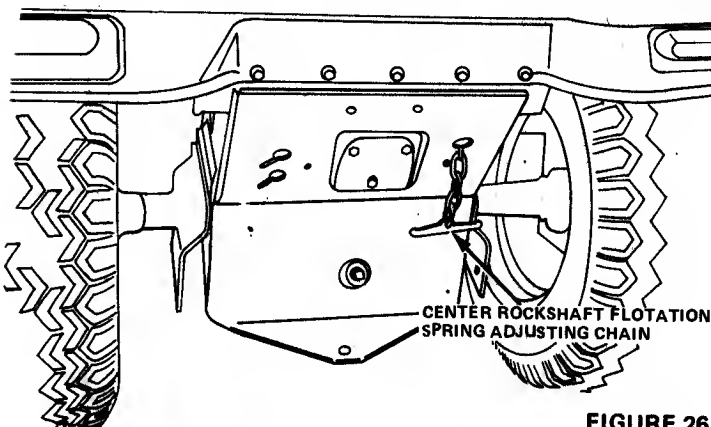


FIGURE 26

**CAUTION** - WHEN ADJUSTING CHAIN TENSION ALWAYS GRASP CHAIN HANDLE FIRMLY (NOT THE CHAIN) AS CONSIDERABLE TENSION IS ON THE CHAIN AND INJURY TO THE HANDS COULD RESULT.

## HYDRAULIC LIFT REAR ROCK SHAFT

The tractor comes with a lift selector device so that the front and center rock shafts can be operated independently of the rear rock shaft while utilizing only one hydraulic cylinder. The alternately latched, split lift linkage system holds the front and center rock shafts in their raised positions while the rear rock shaft is operated by the cylinder or vice versa. This allows a rear mounted attachment to be used without removing the front or center mounted attachments and vice versa.

To make the rear rock shaft operational, move the hydraulic control lever to the "UP" position and hold it there until the cylinder is fully extended. Place the selector knob in the front notch (Figure 27).

To make the front and center rock shafts operational, move the hydraulic control lever to the "UP" position and hold it there until the cylinder is fully extended. Place the selector knob in the rear notch as shown in Figure 27.

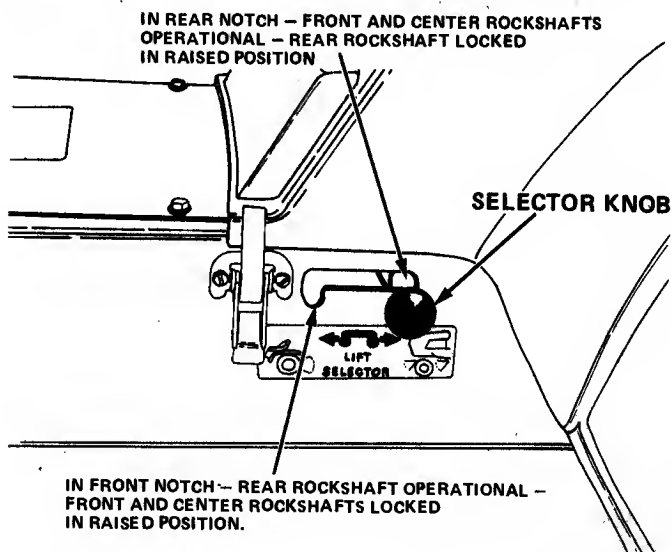


FIGURE 27

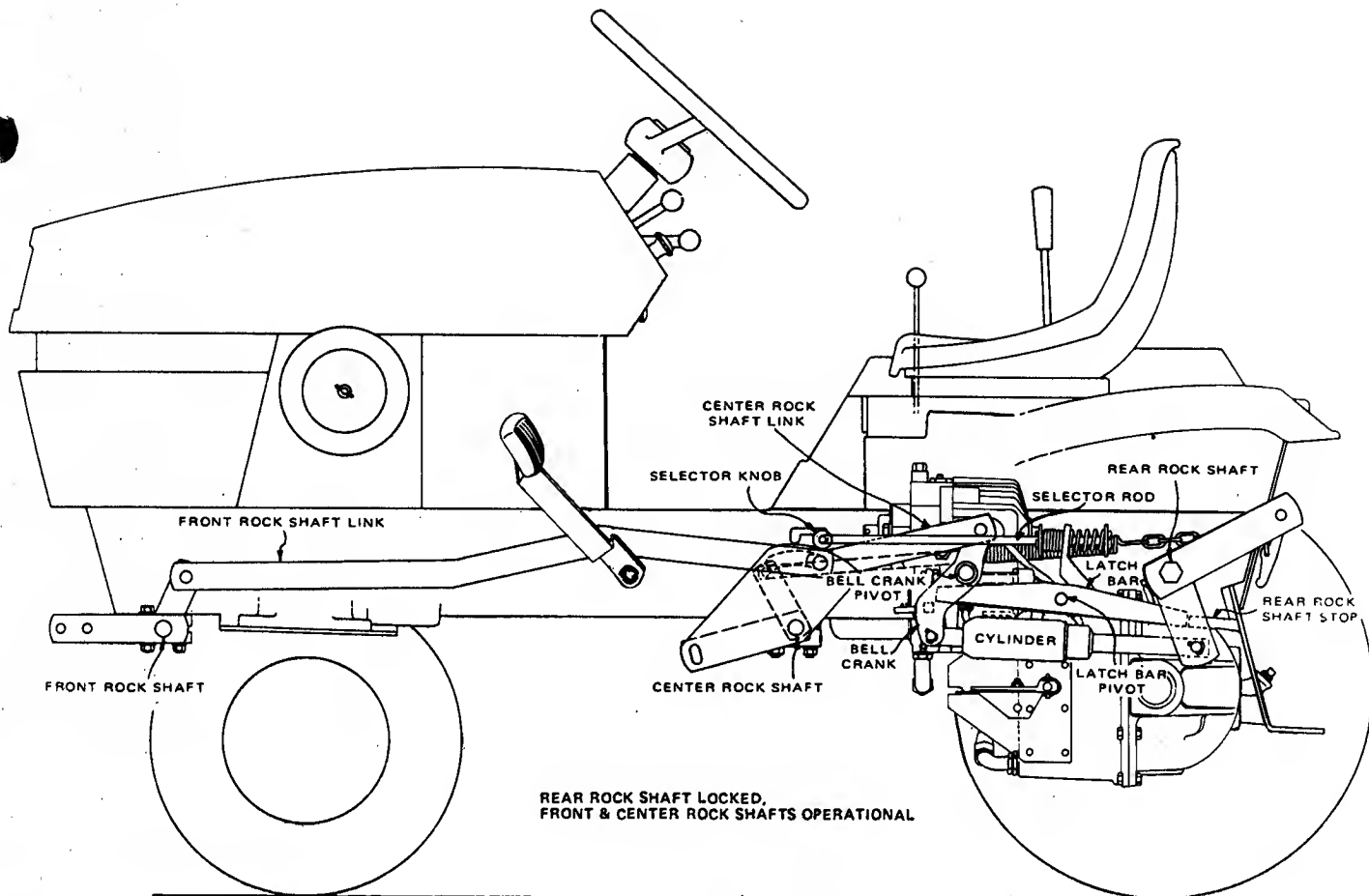


FIGURE 28

# STORAGE

## PREPARATION FOR STORAGE

1. Remove all oil, grease and dirt from engine and transmission.
2. Clean the tractor exterior and tires thoroughly, removing all mud, dirt and grease.
3. Touch up all unpainted and exposed areas with paint to prevent rust.
4. Change engine oil.
5. Disconnect fuel line at fuel filter and drain fuel tank. Run the engine until the fuel is exhausted from the system. Drain the carburetor by loosening the nut on the bottom of the carburetor bowl. Clean the fuel filter.
6. Remove and clean the battery. Check electrolyte level and have battery fully charged. Store battery in a cool, dry place where it will not freeze.
7. Remove the spark plug and pour one tablespoon of SAE 30 oil into the cylinder. Turn engine over manually at least two revolutions.

8. Re-gap spark plug. Replace if required.

9. Grease the steering system.

10. Store tractor in a cool, dry place to reduce tire deterioration. Block up tractor to take the weight off the tires.

11. Inspect tractor for visible signs of wear, breakage or damage. Order any parts required and make necessary repairs to avoid delays when starting next season.

*NOTE: Your authorized Ariens dealer is trained and equipped to service your tractor. A periodic check-up by your dealer will help to reduce your maintenance costs.*

## PREPARATION FOR USE AFTER STORAGE

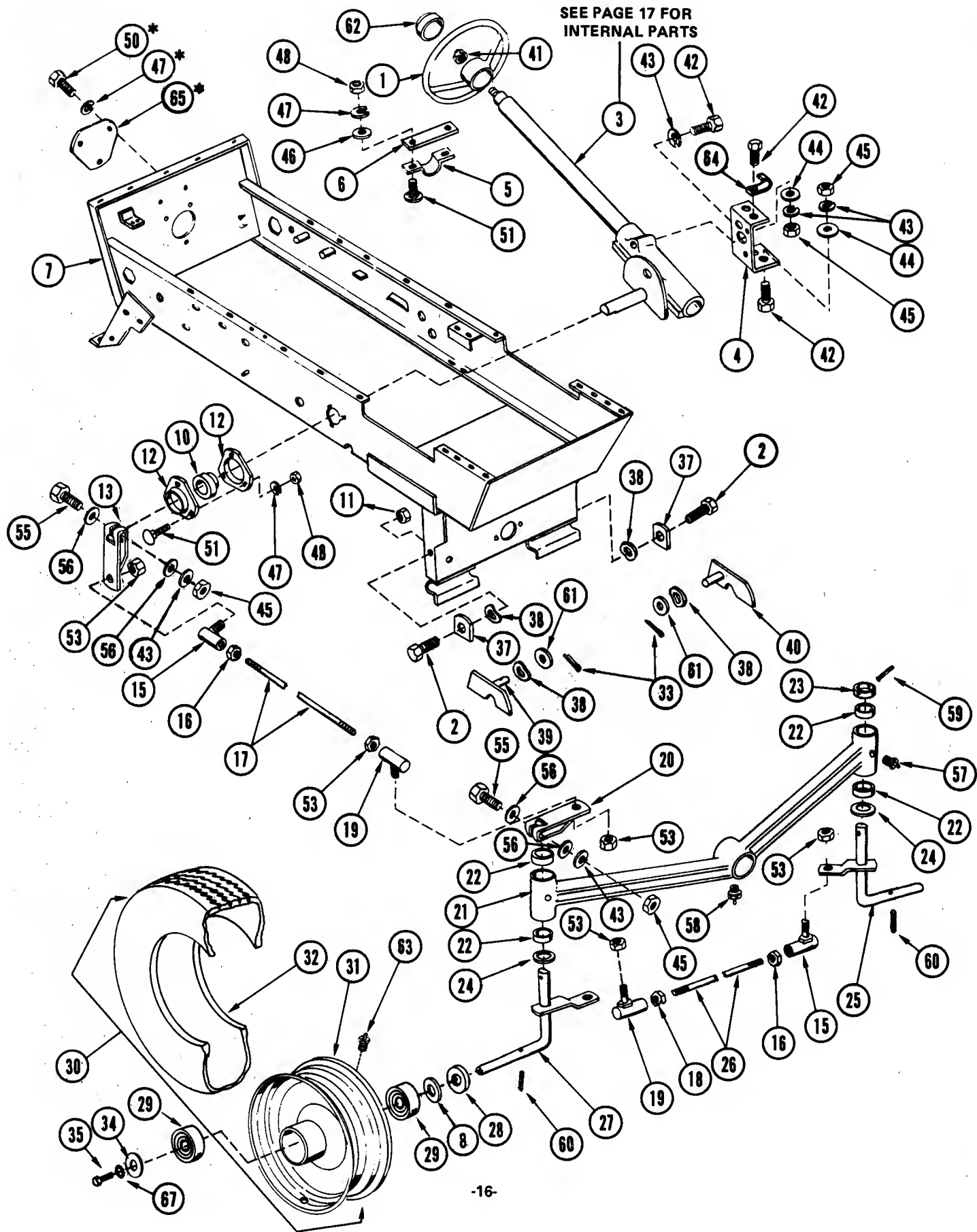
1. Replace battery and check electrolyte level.
2. Fill fuel tank with fresh, clean regular gasoline.
3. Check transmission oil level.
4. Check tire inflation.



# FRAME, STEERING, FRONT WHEEL

HYDROSTATIC MODELS 931015, 931016, 931017 & 031018

SEE PAGE 17 FOR  
INTERNAL PARTS



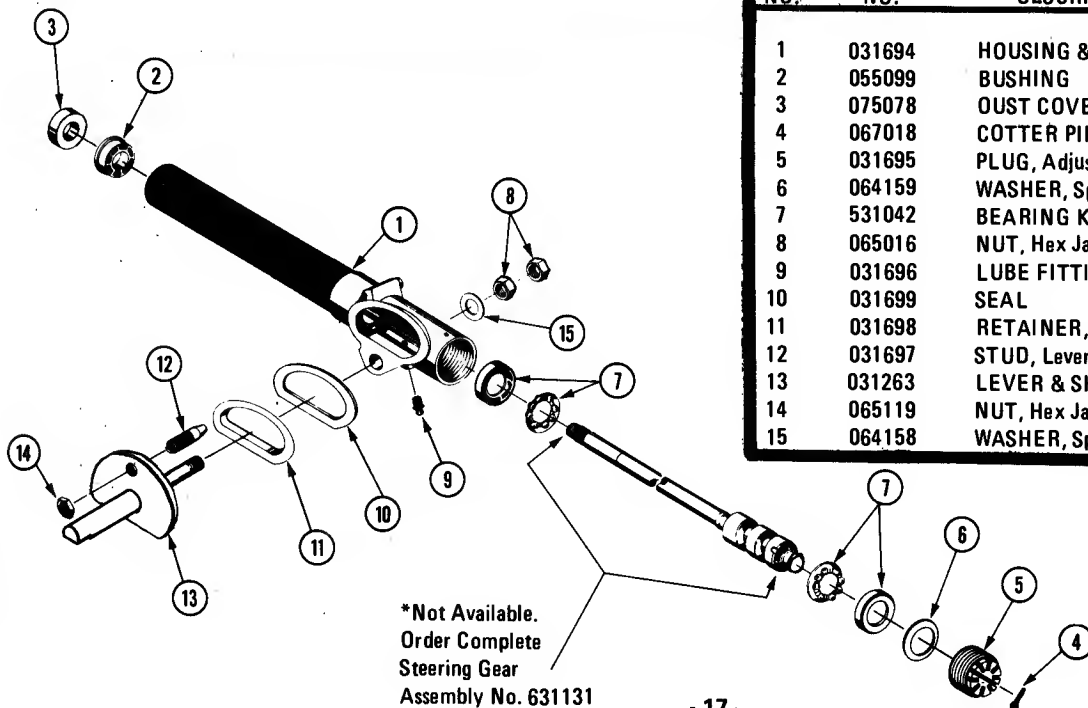
# FRAME, STEERING, FRONT WHEEL

HYDROSTATIC MODELS 931015, 931016, 931017 & 931018

REF NO.	PART NO.	DESCRIPTION	NO REQ'D	REF NO.	PART NO.	DESCRIPTION	NO REQ'D
1	031084	STEERING WHEEL	1	35	059154	CAP SCREW, 3/8-16 x 3/4 GR. 5	2
2	059004	CAP SCREW, HH, 3/8 - 16 x 1	2	36	063006	LOCKWASHER, 1/2"	1
3	631131	STEERING GEAR ASS'Y	1	37	029013	LOCK STOP	2
4	031173	BRACKET, Mounting	1	38	029024	WASHER, Spring	4
5	031038	CLAMP	1	39	029014	LATCH R.H.	1
6	031049	PAD	1	40	029015	LATCH L.H.	1
7	531092	FRAME	1	41	065117	NUT, Hex Jam, 5/8"	1
8	064063	WASHER	AR	42	059145	CAP SCREW, HH, 3/8 x 1" GR.5	7
10	054101	BALL BEARING	1	43	063021	LOCKWASHER, 3/8"	8
11	065098	LOCKNUT, 3/8"	2	44	064008	WASHER, Flat, 3/8"	4
12	031020	BEARING FLANGE	2	45	065018	NUT, Hex, 3/8"	5
13	031262	STEERING ARM	1	46	064002	WASHER, Flat, 5/16"	2
14	064126	WASHER, 2" OD. x 9/16" ID x .135 Thick	1	*47	063003	LOCKWASHER, 5/16"	8
15	031130	BALL JOINT, L.H.	2	48	065015	NUT, Hex, 5/16"	5
16	065105	NUT, Hex Jam 1/2" - 20 UNF (L.H.)	2	*50	059022	CAP SCREW, HH, 5/16 x 3/4	3
17	031929	DRAG LINK	1	51	062015	BOLT, Carriage, 5/16 x 1"	3
18	065044	NUT, Hex Jam 1/2 - 20 UNF (R.H.)	6	52	059146	CAP SCREW, HH, 1/2 x 1-1/4" GR. 5	1
19	031129	BALL JOINT, R.H.	2	53	065121	LOCKNUT 1/2-20 UNF	5
20	031175	STEERING ARM	1	55	059152	CAP SCREW, HH, 3/8 x 2-1/2	1
21	531011	FRONT AXLE W/BUSHING, ZERKS	1	56	064131	WASHER, Flat, 3/8"	2
22	055091	BUSHING	4	57	022093	ZERK FITTING	2
23	031140	SPINOLE COLLER, L.H.	1	58	031121	ZERK FITTING, 90°	1
24	075067	WASHER, 1-1/32 ID x 1-3/4 OD. x .060 Thick	2	59	058037	ROLL PIN, 1/4 x 1-3/4	1
25	031552	SPINOLE, L.H.	1	60	058004	ROLL PIN	2
26	031169	ROD, 18-1/2" Long	1	61	064043	WASHER	2
27	031551	SPINOLE, R.H.	1	62	031083	CAP	1
28	064029	WASHER	2	63	010353	ZERK FITTING	2
29	054121	RADIAL BEARING	2	64	069094	CLAMP	1
30	631084	FRONT WHEEL ASS'Y - Consists of	2	*65	031031	COVER	1
31	071110	RIM	1	67	063030	LOCKWASHER	2
32	071103	TIRE	1				
33	067024	PIN, cotter 1/8 x 3/4	2				
34	031568	WASHER, SPECIAL	2				

\*These parts are not required on Model 931015

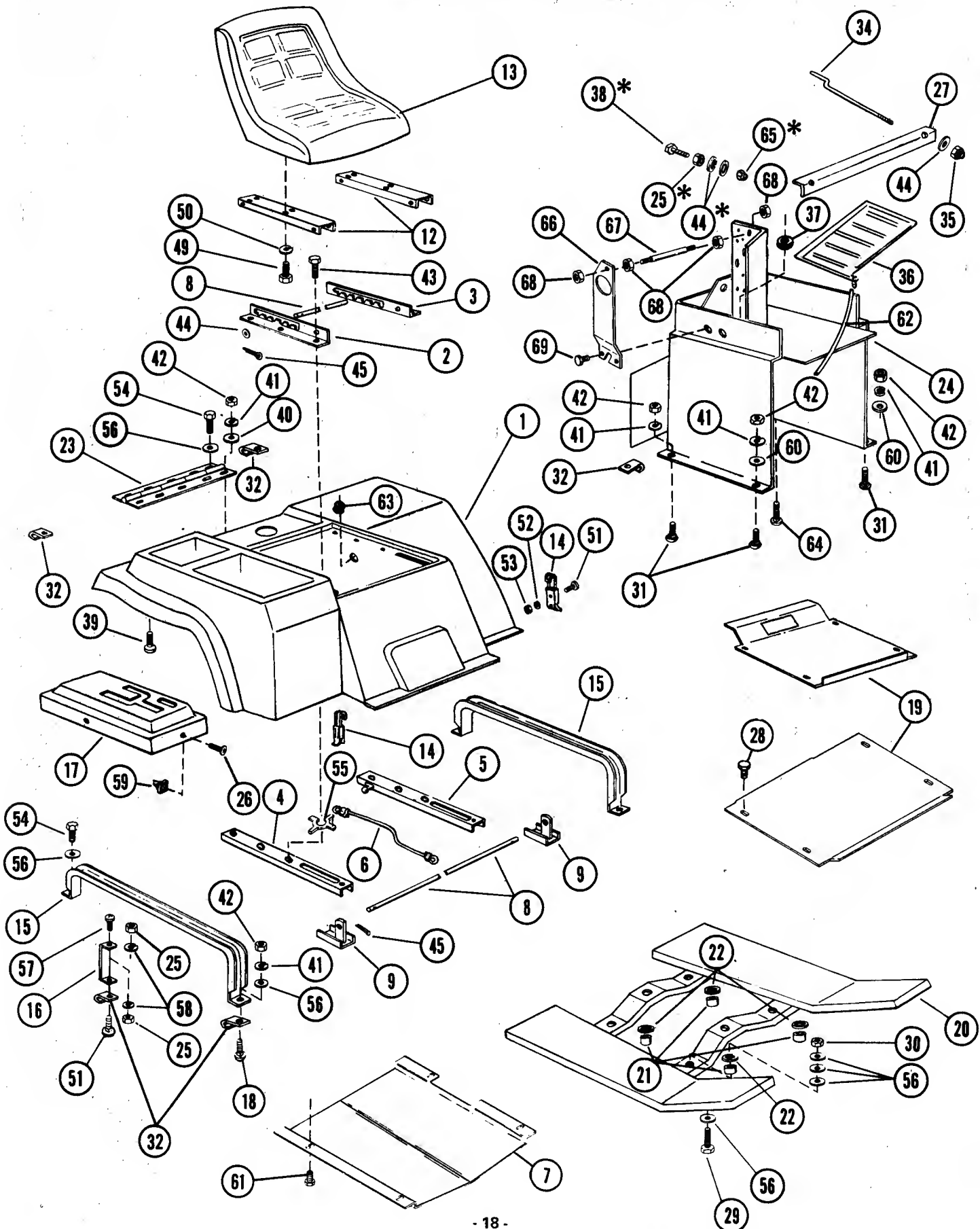
## STEERING GEAR ASSEMBLY



REF. NO.	PART NO.	DESCRIPTION	NO. REQ'D
1	031694	HOUSING & TUBE ASSEMBLY	1
2	055099	BUSHING	1
3	075078	OUST COVER	1
4	067018	COTTER PIN, 1/8" x 1/2"	1
5	031695	PLUG, Adjusting	1
6	064159	WASHER, Special	1
7	531042	BEARING KIT	2
8	065016	NUT, Hex Jam, 3/4"	2
9	031696	LUBE FITTING, 1/4" Straight	1
10	031699	SEAL	1
11	031698	RETAINER, Seal	1
12	031697	STUD, Lever	1
13	031263	LEVER & SHAFT	1
14	065119	NUT, Hex Jam, 9/16"	1
15	064158	WASHER, Special	1

# REAR DECK, SEAT, DASH SUPPORT, RUNNING BOARD

HYDROSTATIC MODELS 931015, 931016, 931017, & 931018



# REAR DECK, SEAT, DASH SUPPORT, RUNNING BOARD

HYDROSTATIC MODELS 931015, 931016, 931017 & 931018

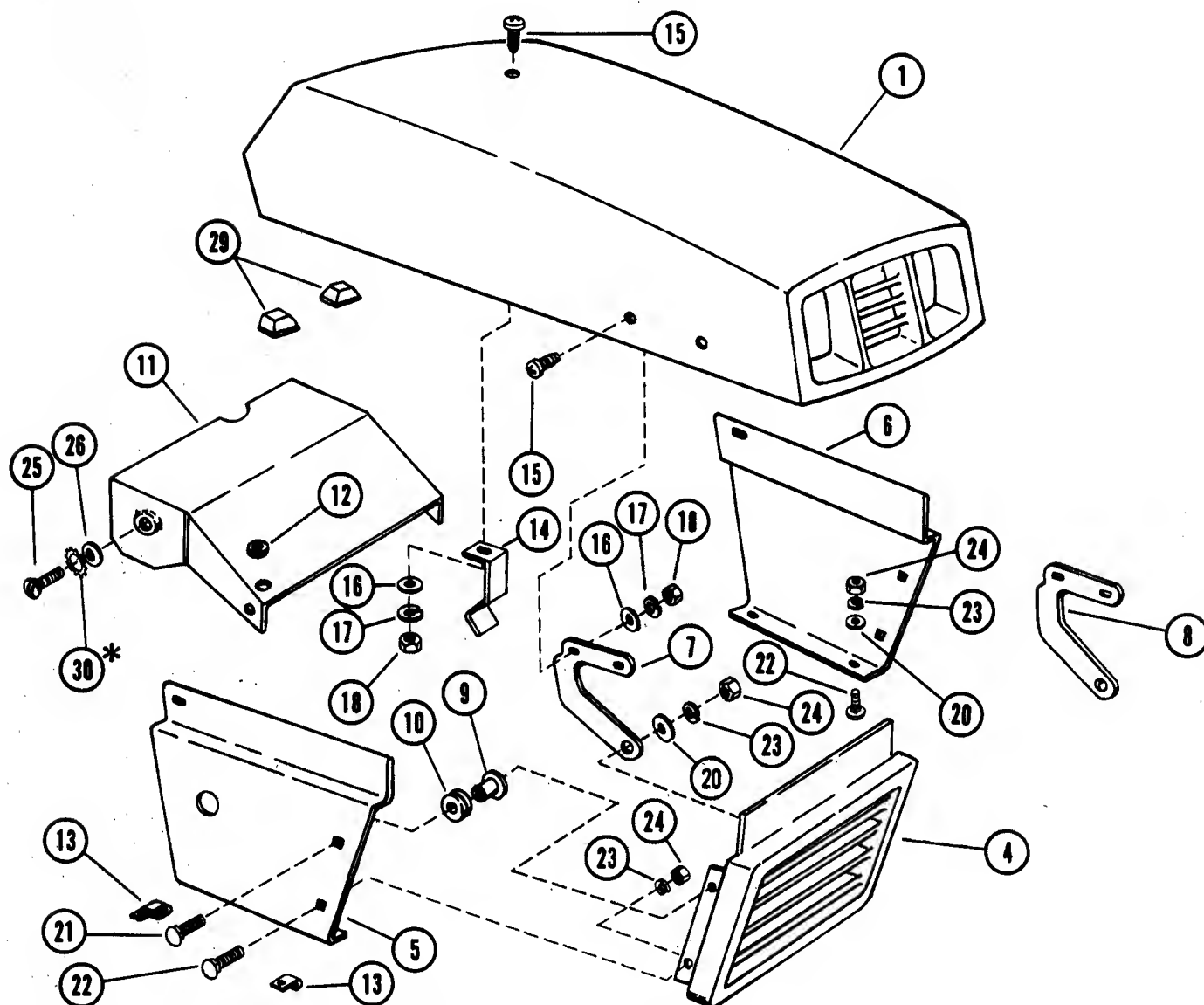
REF NO.	PART NO.	DESCRIPTION	NO REQ'D	REF NO.	PART NO.	DESCRIPTION	NO REQ'D
1	031713	REAR DECK	1	35	065070	NUT, Crown	2
2	031132	SEAT BRACKET, right hand	1	36	031701	BATTERY TRAY (Models 931016, 031017 & 931018)	1
3	031133	SEAT BRACKET, left hand	1		031999	BATTERY TRAY (Model 931015)	1
4	031197	SEAT SUPPORT	1	37	075065	GRDMMET	1
5	031134	SUPPORT	1	38*	059150	CAP SCREW, HH, 1/4 x 1-1/2	1
6	069102	CABLE, 24"	1	39	061042	SCREW, Machine, Truss H, 5/16 x 3/4	4
7	031798	BOTTOM COVER	1	40	064123	WASHER, Flat, 5/16	4
8	031135	ROD, 12-5/16" Long	2	41	063003	LOCKWASHER, 5/16	10
9	031131	CHANNEL	2	42	065015	NUT, Hex, 5/16	10
12	031711	CHANNEL	2	43	074043	SCREW, Self-Tapping, HH, No. 10 x 1/2"	6
13	031710	SEAT	1	44*	064127	WASHER, Flat, 1/4"	6
14	031094	CLAMP	2	45	067003	PIN, Cotter, 1/16 x 1/2"	4
15	031517	CHANNEL	2	49	059023	CAP SCREW, HH, 3/8" x 3/4"	4
16	031055	SUPPORT	1	50	063021	LOCKWASHER, 3/8"	4
17	631118	CONSOLE DECK, W/Decal	1	51	061012	SCREW, Machine R.H. No. 10-32 x 1/2"	5
18	062034	BOLT, Carriage, 5/16 - 18 x 3/4	2	52	063026	LOCKWASHER, No. 10	4
19	531069	FLOOR PLATE, On 931016, 931017 & 931018	1	53	065026	NUT, Hex, No. 10-32	4
	531100	FLOOR PLATE, On 931015	1	54	074017	SCREW, Self-Tapping, HH, 5/16 x 3/4	5
20	031569	RUNNING BOARD	1	55	031556	X WASHER	1
21	031019	SPACER	4	56	064002	WASHER, Flat, 5/16	17
22	075066	GROMMET	4	57	061039	SCREW, Machine, Truss H, 1/4 x 3/4	1
23	031028	HINGE	1	58	063002	LOCKWASHER, 1/4"	2
24	531068	DASH SUPPORT	1	59	075076	PLASTIC GROMMET	4
25*	065032	NUT, Hex, 1/4"	3	60	064123	WASHER	2
26	074001	SCREW, Self-Tapping, No. 10 x 3/8"	4	61	070015	FLANGE, Whizlock Screw	4
27	031086	BATTERY TIE DOWN	1	62	031709	HOSE	1
28	070015	FLANGE WHIZLOCK SCREW, 5/16-18 x 1/2	4	63	075044	GROMMET	1
29	059069	CAP SCREW, HH, 5/16 x 1-1/4	4	64	062015	CARRIAGE BOLT	1
30	065042	LOCKNUT, Hex, 5/16"	4	65*	065099	NUT	1
31	062011	BOLT, Carriage, 5/16 x 3/4	4	66	031961	BRACKET	1
32	069094	"J" CLAMP	4	67	031965	RDD	1
34	031089	RDD, Battery Tie Down	2	68	065056	LOCKNUT	4
				69	074052	SCREW, Self Tapping	2

MODEL 931015  
ONLY

\*THESE PARTS ARE NOT REQUIRED ON MODEL 931015

# HOOD, GRILL, AND HEAT SHIELD

HYDROSTATIC MODELS 931015, 931016, 931017 & 931018

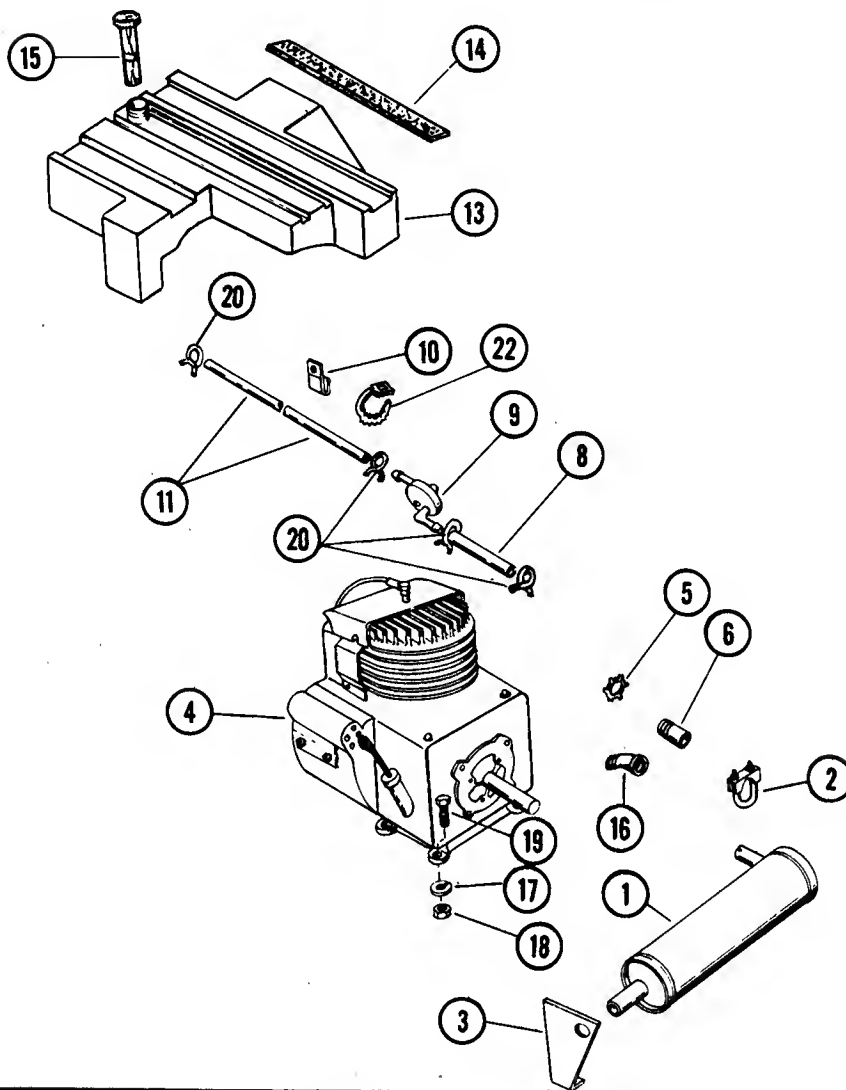


REF NO.	PART NO.	DESCRIPTION	NO. REQ'D.	REF NO.	PART NO.	DESCRIPTION	NO. REQ'D.
1	531002	HOOD, S-12H	1	17	063002	LOCKWASHER, 1/4"	5
	531008	HOOD, S-14H	1	18	065032	NUT, Hex, 1/4"	5
	531009	HOOD, S-16H	1	20	064008	WASHER, Flat, 3/8"	6
4	031046	GRILL	1	21	062032	BDLT, Carriage 3/8" x 2	2
5	031139	SIDE, Right Hand	1	22	062013	BDLT, Carriage, 3/8" x 1	6
6	031138	SIDE, Left Hand	1	23	063021	LOCKWASHER, 3/8"	8
7	031185	HINGE, Right Hand	1	24	065018	NUT, Hex, 3/8"	8
8	031186	HINGE, Left Hand	1	25	061042	SCREW, Machine, Truss H, 5/16 x 3/4	2
9	031145	SPACER, 3/4"	2	26	064123	WASHER, Flat, 5/16"	2
10	075064	GROMMET	2	29	075058	HDD STOP	2
11	031091	MUFFLER SHIELD, Models 931016, 931017 & Model 931018)	1	30*	063018	STAR LOCKWASHER	2
	031986	MUFFLER SHIELD, (Model 931015)	1				
12	075066	GROMMET	1				
13	069094	"J" CLAMP	2				
14	031093	LATCH	1				
15	061039	SCREW, Machine, Truss H, 1/4 x 3/4	5				
16	064127	WASHER, Flat, 1/4"	5				

\*(A quantity of 4 is required on Model 931015)

# MUFFLER, FUEL LINES & TANK

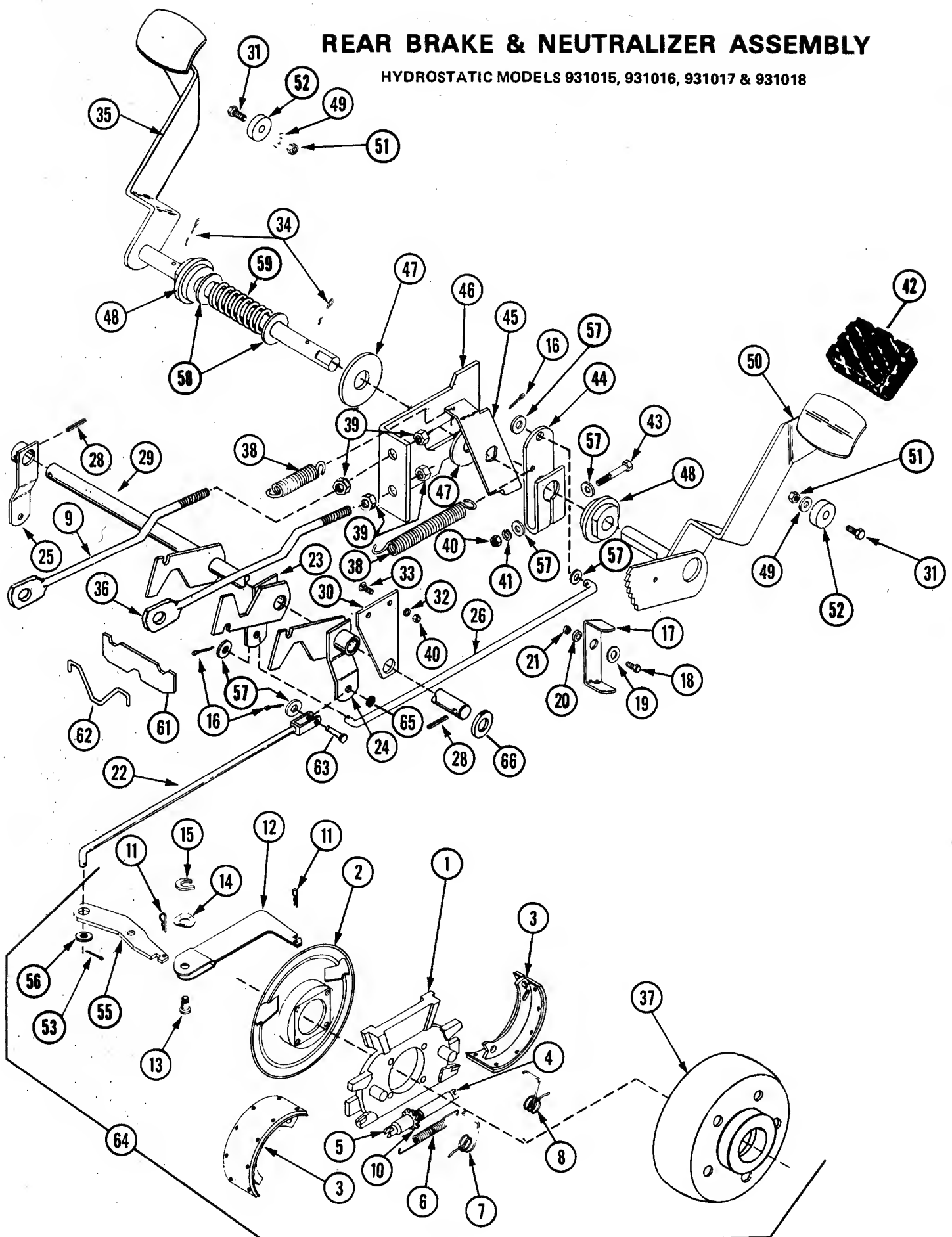
HYDROSTATIC MODELS 931015, 931016, 931017 & 931018



REF NO.	PART NO.	DESCRIPTION	931016	931017	931018	931015	REF. NO.	PART NO.	DESCRIPTION	931016	931017	931018	931015
1	031984	MUFFLER				1	6	031177	PIPE, 1-1/4 x 2"				1
	031184	MUFFLER			1			031180	PIPE NIPPLE	1	1		
	031155	MUFFLER	1	1			8	029113	HOSE, 4" Long	1	1	1	1
2	031985	CLAMP			1		9	029108	FILTER, Fuel	1	1	1	1
	031266	CLAMP			1		10	069094	"J" CLAMP	1	1	1	1
	023401	CLAMP	1	1			11	031264	HOSE, 47" Long	1	1	1	1
3	031082	BRACKET, Muffler			1	1	13	031818	TANK, Fuel	1	1	1	1
	031187	BRACKET, Muffler	1	1			14	031904	FOAM, 6" Long	AR	AR	AR	AR
4		ENGINE, S-12, Kohler No. 301S- PF 47404D	1				15	031819	GAS GAUGE & CAP	1	1	1	1
		ENGINE, S-14 Kohler No. 321-S PF60238	1				16	031190	ELBOW, Street, 45°, 1-1/4			1	
		ENGINE, S-16 Kohler No. 341-S PF71109A	1				17	063021	LOCKWASHER, 3/8	4	4	4	4
		ENGINE, S-18 Kohler No. 361QS - PF 231108	1				18	065018	NUT, Hex, 3/8	4	4	4	4
5	070039	LOCKNUT, Special	1	1	1		19	059151	CAP SCREW, HH, 3/8 x 1-1/2 GR.5	4	4	4	4
	070040	LOCKNUT, Special			1		20	029172	HOSE CLAMP	4	4	4	4
							22	069053	TIE	1	1	1	1

# REAR BRAKE & NEUTRALIZER ASSEMBLY

HYDROSTATIC MODELS 931015, 931016, 931017 & 931018





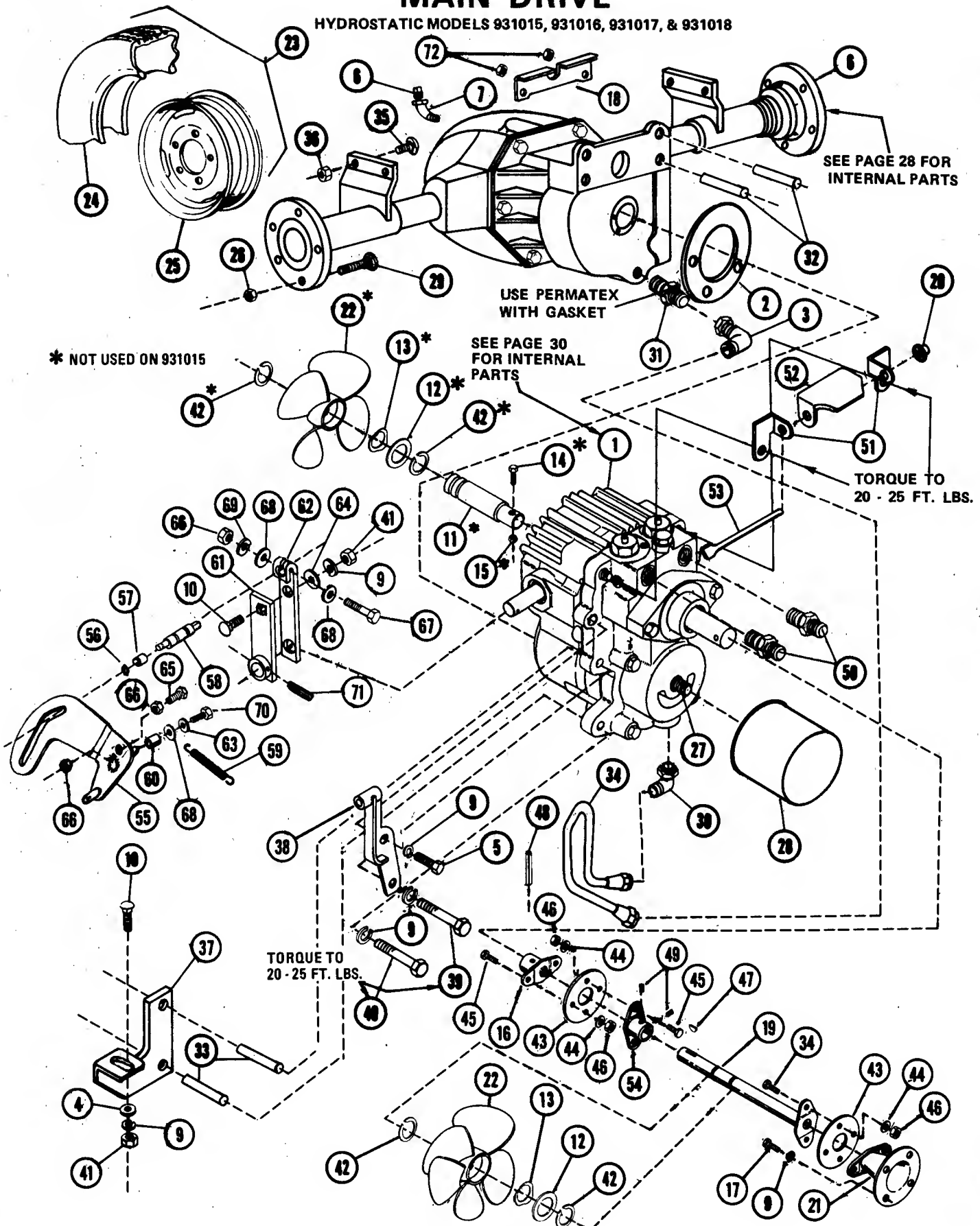
# REAR BRAKE & NEUTRALIZER ASSEMBLY PARTS

HYDROSTATIC MODELS 931015, 931016, 931017, & 931018

REF NO.	PART NO	DESCRIPTION	NO REQ'D	REF NO.	PART NO	DESCRIPTION	NO REQ'D
1	031679	TORQUE, Spider	2	36	031506	NEUTRALIZER ROD	1
2	031678	OUST SHIELD	2	37	031674	BRAKE ORUM	2
3	531039	BRAKE SHOE (sold in sets of two only)	2	38	083122	SPRING	2
4	031680	PIVOT NUT	2	39	065046	LOCKNUT, Hex 1/2"	4
5	031682	SOCKET, Adjusting Screw	2	40	065018	NUT, Hex 3/8"	5
6	083162	SPRING, Adjusting Shoe	2	41	063021	LOCKWASHER, 3/8"	1
7	083161	SPRING, Shoe Return, L.H.	2	42	075051	PEDAL PAD	2
8	083160	SPRING, Shoe Return, R.H.	2	43	059030	CAP SCREW, HH 3/8" x 2-1/4"	1
9	031576	ROD, Shift	1	44	031505	ARM, Brake	1
10	031681	ADJUSTING SCREW, (star wheel)	2	45	031503	NEUTRALIZER ARM	1
11	067032	HAIR PIN RETAINER	4	46	031502	NEUTRALIZER PLATE	1
12	031675	STRUT & LEVER ASSEMBLY	2	47	064042	WASHER, Special	2
13	031677	PIN	2	48	055095	BUSHING	2
14	064156	WAVE WASHER	2	49	064002	WASHER, 5/16"	2
15	031702	RETAINER CLIP	2	50	031504	R.H. PEDAL	1
16	067001	PIN, Cotter	4	51	065042	LOCKNUT, Hex 5/16"	2
17	031507	BRAKE LATCH	1	52	025135	SPACER	2
18	059001	CAP SCREW, HH, 1/4" x 3/4"	1	53	067001	PIN, Cotter 3/32" x 3/4"	2
19	064127	WASHER, Special	1	54	064058	WASHER, Flat 3/4"	2
20	011091	SPACER, Bushing	1	55	031676	PARK BRAKE LEVER	2
21	065040	LOCKNUT, Hex, 1/4"	1	56	064057	WASHER, 5/16"	2
22	031935	BRAKE ROD	2	57	064043	WASHER, Flat 3/8"	7
23	031939	BRAKE ARM	1	58	064048	WASHER	2
24	031940	ARM	1	59	083055	SPRING	1
25	031938	BRAKE ARM	2	60	067029	HAIR PIN	1
26	031508	BRAKE ROD	1	61	031936	BAL. LINK	1
27	067004	PIN, Cotter 1/8 x 1	1	62	031937	CLIP	1
28	058040	PIN, Drive 1/4" x 1-1/4"	2	63	013303	CLEVIS PIN	2
29	031941	BRAKE SHAFT	1	64	631107	R.H. BRAKE ASSEMBLY	1
30	031509	PLATE	2		631108	L.H. BRAKE ASSEMBLY	1
31	059003	CAP SCREW, HH 5/16"	2	65	075022	GROMMET	2
32	063004	LOCKWASHER, 3/8"	4	66	064062	WASHER	AR
33	062013	BOLT, Carriage 3/8" x 1"	4				
34	067006	PIN, Cotter 3/16" x 1-1/4"	2				
35	031501	L. H. PEDAL	1				

# MAIN DRIVE

HYDROSTATIC MODELS 931015, 931016, 931017, & 931018



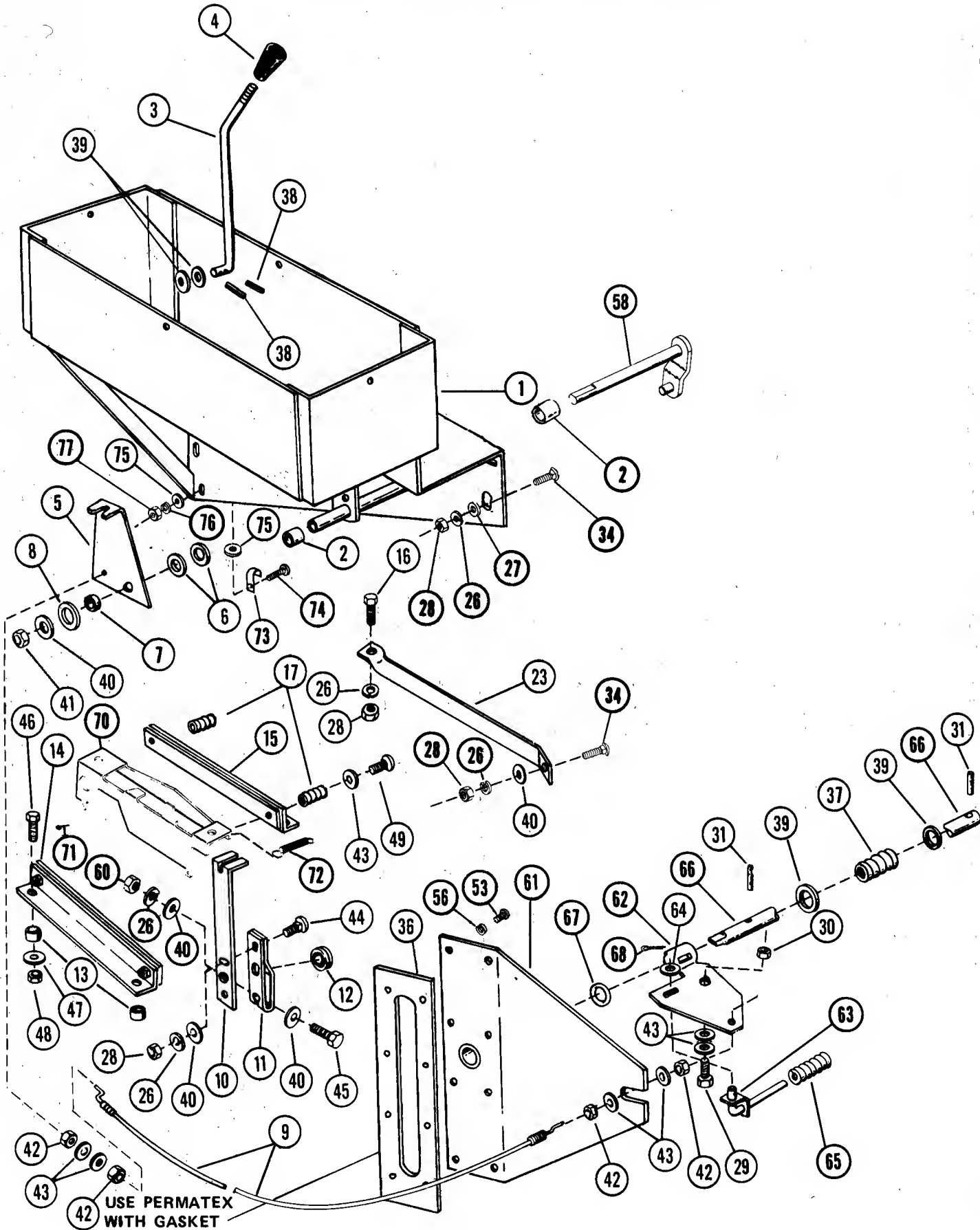
# MAIN DRIVE

HYDROSTATIC MODELS 931015, 931016, 931017, & 931018

REF NO.	PART NO.	DESCRIPTION	NO REQ'D	REF NO.	PART NO.	DESCRIPTION	NO REQ'D
1	631088	TRANSMISSION	1	36	065127	LOCK NUT	4
2	031480	GASKET	1	37	031491	BRACKET	1
3	031485	ELBOW, 90°, SWIVEL	1	38	031574	PIVOT BRACKET	1
4	064008	WASHER	1	39	059175	CAP SCREW	1
5	059006	CAP SCREW, HH, 3/8 x 1-1/4	1	40	059171	CAP SCREW	3
6	631066	AXLE	1	41	065018	NUT, Hex, 3/8"	2
7	031125	STREET ELBOW, 1/2" x 45°	1	42	057062	RING, External Snap (S-12H, S-14H, S-16H)	2
8	001137	PLUG, Pipe, 1/2"	1		057012	RING, External Snap (S-18H only)	2
9	063021	LOCKWASHER, 3/8"	7	43	031952	SPACER, Special	2
10	062013	CARRIAGE BOLT	2	44	064123	WASHER, Flat, 5/16	8
11	031516	SHAFT	1	45	059022	CAP SCREW, HH, 5/16 x 3/4	8
12	064063	WASHER, Special	1	46	065042	LOCKNUT, Hex, 5/16	4
	064095	WASHER, Special (Model 931015 only)	1	47	066003	KEY, Woodruff, 3/16 x 3/4	1
13	011113	WAVE WASHER	1	48	058007	PIN, Roll	1
	031998	WAVE WASHER (Model 931015 only)	1	49	060012	SETSCREW, Sq. Hd., 5/16 x 1	2
14	059056	CAP SCREW	1	50	031495	CONNECTOR	2
15	065040	LOCK NUT	1	51	031570	SUPPORT	2
16	031982	COUPLING	1	52	031577	CAM	1
17	059099	CAP SCREW	4	53	031572	PIVOT ROD	1
18	031987	TORQUE BRACE (Model 931015 only)	1	54	031951	OUTPUT COUPLING	1
19	631153	SHAFT, W/Roll Pin	1	55	031492	CAM	1
20	031573	PUSH NUT	1	56	057063	SNAP RING	1
21	031978	DRIVE COUPLING	1	57	031137	ROLLER, 1/2" O.D.	1
22	031515	FAN	1	58	031023	ECCENTRIC PIN	1
	031995	FAN (Model 931015 only)	1	59	083116	SPRING, 2-13/16 Long	1
23	631002	TIRE & WHEEL ASS'Y, Consists of	2	60	031691	HUB	1
24	071105	TIRE, 23 x 10.50-12	1	61	031493	HUB	1
25	071106	WHEEL W/Valve	1	62	031494	PINTLE ARM	1
23	631097	TIRE & WHEEL ASS'Y Consists of	2	63	064003	WASHER, Flat, 1/2"	1
24	071114	TIRE	1	64	064043	WASHER, Flat, 3/8"	1
25	071115	RIM	1	65	059132	CAP SCREW, HH, 1/4 x 1	1
26	065114	LUG NUT	10	66	065032	NUT, Hex, 1/4"	3
27	031618	FILTER UNION	1	67	059162	CAP SCREW, HH, 1/4 x 2", Grade 5	1
28	031928	FILTER, Oil	1	68	064127	WASHER, Flat, 1/4"	3
29	070044	LUG BOLT	10	69	063002	LOCKWASHER, 1/4"	1
30	031489	ELBOW, 90° "O" Ring	1	70	070015	FLANGE WHIZLOCK SCREW, 1/4-20 x 1/2"	1
31	031484	CONNECTOR, Male	1	71	058038	ROLL PIN	1
32	031487	SPACER	2	72	065043	NUT, (Model 931015 Only)	2
33	031488	SPACER	2				
34	031490	TUBE, Assembly	1				
35	062014	CARRIAGE BOLT Grade 5	4				

# HYDROSTATIC CONTROLS AND CONSOLE

HYDROSTATIC MODELS 931015, 931016, 931017 & 931018



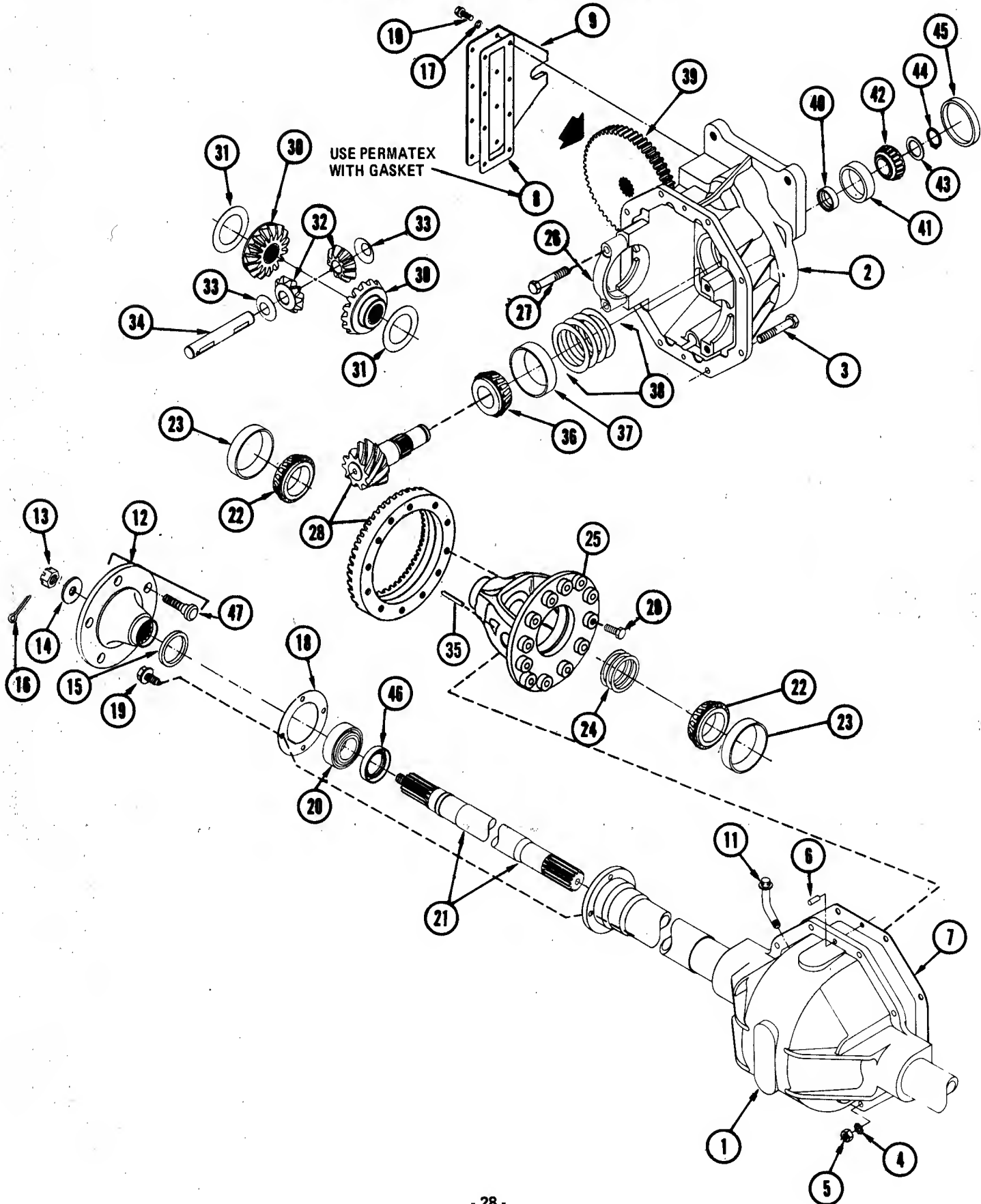
# HYDROSTATIC CONTROLS AND CONSOLE

HYDROSTATIC MODELS 931015, 931016, 931017 & 931018

REF NO.	PART NO.	DESCRIPTION	NO REQ'D	REF NO.	PART NO.	DESCRIPTION	NO REQ'D
1	031160	CONTROL BOX	1	39	064003	WASHER, Flat, 1/2"	4
2	055024	BUSHING	2	40	064043	WASHER, Flat, 3/8"	5
3	031064	SHIFT ROD	1	41	065098	LOCKNUT, Hex, 3/8"	1
4	075049	HANDLE	1	42	065100	NUT, Hex Jam, 5/16"	4
5	031258	ARM	1	43	064123	WASHER, Flat, 5/16"	8
6	064028	WASHER, Spacer	2	44	062029	BOLT, Carriage, 3/8 x 1	1
7	055089	BUSHING	1	45	059152	CAP SCREW, HH, 3/8 x 2-1/2 Grade 5	1
8	031162	WASHER, Special	1	46	059069	CAP SCREW, HH, 5/16 x 1-1/4" Grade 5	2
9	069100	CABLE, 24-7/8" Long	1	47	063003	LOCKWASHER, 5/16"	2
10	031261	ARM	1	48	065015	NUT, Hex, 5/16"	2
11	031260	CLEVIS	1	49	061044	SCREW, Machine Fillister Hd, 5/16 x 2-1/2	2
12	075046	GROMMET	1	53	074045	TAPPING SCREW	8
13	031127	SPACER	2	56	063024	LOCKWASHER	8
14	031567	RH FRICTION ANGLE	1	58	031575	SHIFT SHAFT	1
15	031566	LH FRICTION ANGLE	1	60	065018	NUT	1
16	059023	CAP SCREW, HH, 3/8" x 3/4"	1	61	031100	LOCK PIN GUIDE	1
17	083125	SPRING, 1-1/2 Long	2	62	031099	PIVOT PLATE	1
23	031024	BRACE	1	63	031098	PIN	1
26	063021	LOCKWASHER, 3/8"	6	64	064128	WASHER, Special	1
27	064008	WASHER, Flat, 3/8"	2	65	083121	SPRING	1
28	065018	NUT, Hex, 3/8"	5	66	031097	PIN	1
29	059135	CAP SCREW 5/16-18 x 3/4 GR.5	1	67	056075	"O" RING	1
30	065101	LOCKNUT, Hex, 5/16	1	68	067024	PIN, Cotter, 1/8 x 3/4	1
31	058003	ROLL PIN, 3/16 x 1-1/4	2	70	031724	SHIFT LOCK	1
34	062013	CARRIAGE BOLT	3	71	067034	COTTER PIN	2
36	031167	GASKET	1	72	083149	SPRING	1
37	083120	SPRING	1	73	069110	CLAMP	1
38	058005	PIN, Spring 3/16 x 7/8	2	74	059004	SCREW	1
				75	064002	WASHER	2
				76	063021	LOCKWASHER	1
				77	065018	NUT	1

# REAR AXLE

HYDROSTATIC MODELS 931015, 931016, 931017 & 931018



# REAR AXLE PARTS LIST

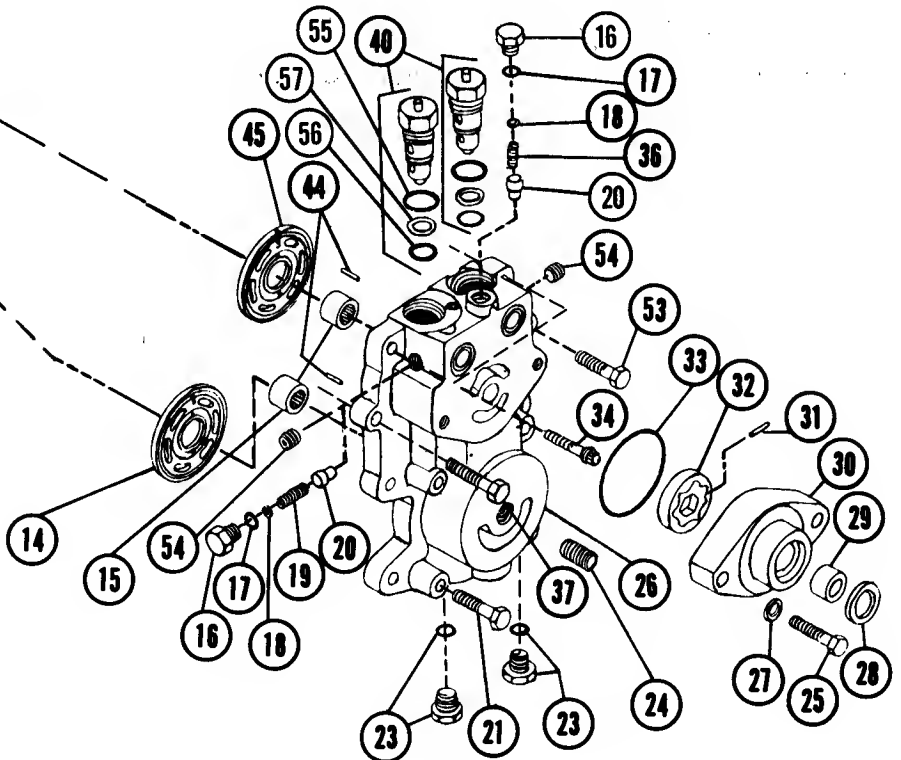
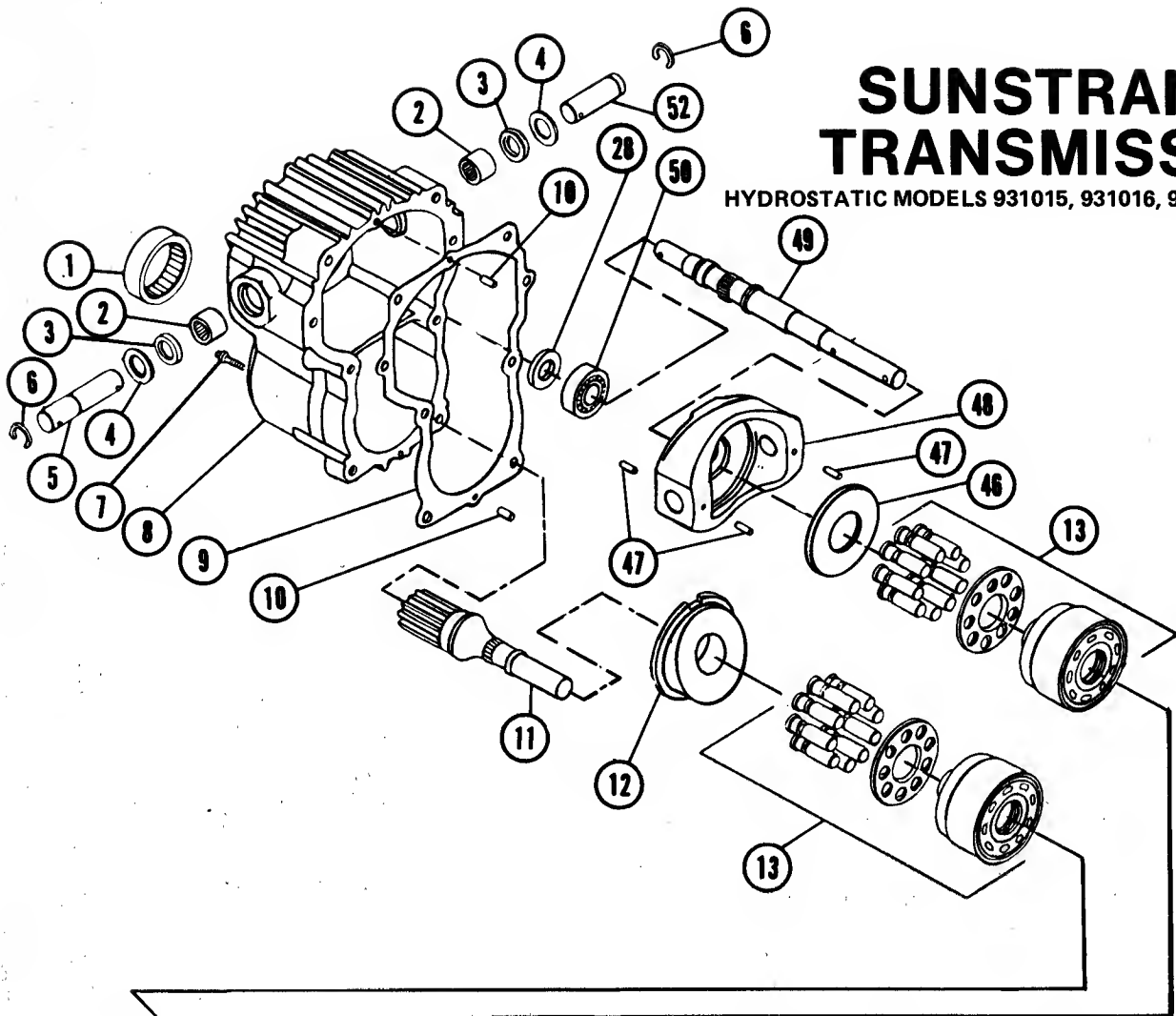
HYDROSTATIC MODELS 931015, 931016, 931017 & 931018

REF. NO.	PART NO.	DESCRIPTION	NO. REQ'D	REF. NO.	PART NO.	DESCRIPTION	NO. REQ'D
1	031635	Rear Housing	1	31	064154	Throw Washer	2
2	531052	Front Housing w/Bearing Cap	1	32	031652	Bevel Mate Gear	2
3	059181	Cap Screw, Hex Head, 5/16" x 1" Grade 5	8	33	064155	Thrust Washer	2
4	063018	Lockwasher, External Tooth, 5/16"	8	34	031653	Pinion Mate Shaft	1
5	065015	Hex Nut, 5/16"	8	35	031654	Lock Pin	1
6	031637	Dowel Pin, 1/4" x 3/4"	2	36	054132	Bearing Cone	1
7	031638	Housing Gasket	1	37	054133	Bearing Cup	1
8	031167	Gear Cover Gasket	1	38	031655	Rear Pinion Bearing Shim .003	AR
9	031100	Lock Pin Guide	1		031656	Rear Pinion Bearing Shim .005	AR
10	074045	Self-Tapping Screw, Hex Head, No. 10 x 1/2"	8	39	031657	Spur Gear	1
11	031639	Vent Tube Assembly	1	40	031658	Front Pinion Bearing Spacer	1
12	531040	Wheel Hub w/Lug Bolts	2	41	054134	Bearing Cup	1
13	065118	Nut	2	42	054135	Bearing Cone	1
14	064163	Special Washer	2	43	531049	Shim Kit consists of the following,	
15	031641	Felt Seal	2		031659	Front Pinion Bearing Shim .031	AR
16	067005	Cotter Pin	2		031660	Front Pinion Bearing Shim .033	AR
17	063024	Lockwasher	8		031661	Front Pinion Bearing Shim .035	AR
18	031642	Wheel Bearing Gasket	2		031662	Front Pinion Bearing Shim .037	AR
19	070027	Flange Whizlock Screw 5/16-18 x 3/4"	8		031663	Front Pinion Bearing Shim .039	AR
20	054129	Bearing and Cone Assembly	2		031664	Front Pinion Bearing Shim .041	AR
21	031643	Axle Shaft - Left Hand	1		031665	Front Pinion Bearing Shim .043	AR
	031644	Axle Shaft - Right Hand	1		031666	Front Pinion Bearing Shim .045	AR
22	054130	Bearing Cone	2		031667	Front Pinion Bearing Shim .047	AR
23	054131	Bearing Cup	2		031668	Front Pinion Bearing Shim .049	AR
24	031645	Differential Bearing Adjusting Shim .003	AR		031669	Front Pinion Bearing Shim .051	AR
	031646	Differential Bearing Adjusting Shim .005	AR		031670	Front Pinion Bearing Shim .053	AR
	031647	Differential Bearing Adjusting Shim .010	AR		031671	Front Pinion Bearing Shim .055	AR
	031648	Differential Bearing Adjusting Shim .030	AR		031672	Front Pinion Bearing Shim .057	AR
25	031649	Differential Case	1	44	057026	Retaining Ring	1
26	N.A.	Bearing Cap (This Cap is bolted to Ref. No. 2 and then machined as a matched Assembly)	2	45	031673	Cup Plug	1
27	059126	Hex Head, Cap Screw, 7/16" x 2"	4	46	056093	Oil Seal	2
28	531050	Ring and Pinion Gear Set	1	47	070044	Wheel Lug Bolt	10
29	070043	Special Bolt	10				
30	031651	Side Gear	2				



# SUNSTRAND TRANSMISSION

HYDROSTATIC MODELS 931015, 931016, 931017, & 931018



NOTE: USE ARIENS GARD-N-YARD OIL  
10W-30 OR EQUIVALENT DETER-  
GENT TYPE MOTOR OIL.

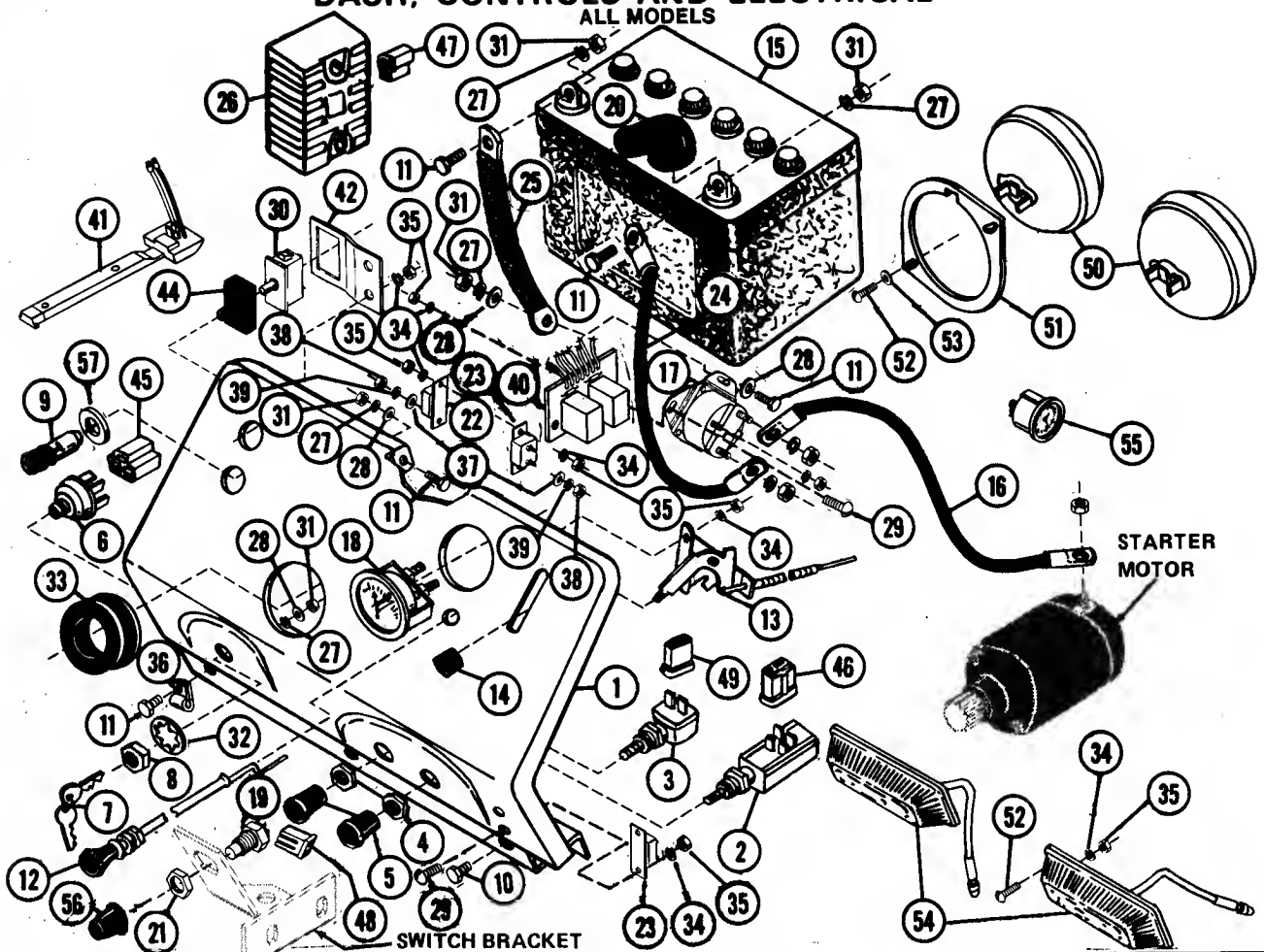
# SUNSTRAND TRANSMISSION

HYDROSTATIC MODELS 931015, 931016, 931017 & 931018

REF. NO.	PART NO.	DESCRIPTION	NO. REQ'D	REF. NO.	PART NO.	DESCRIPTION	NO. REQ'D
1	054128	ROLLER BEARING	1	28	056091	LIP SEAL	2
2	054126	NEEDLE BEARING	2	29	054054	NEEDLE BEARING	1
3	056089	LIP SEAL	2	30	031617	CHG PUMP HOUSING	1
4	064151	WASHER	2	31	031631	PIN, Oowell	1
5	031615	TRUNNION SHAFT	1	32	531034	ROTOR ASSEMBLY	1
6	057069	RETAINING RING	2	33	056092	"O" RING	1
7	059180	CAP SCREW, 12 Pt.	2	34	059179	CAP SCREW, 12 Pt. GR.5	2
8	031624	HOUSING	1	36	083159	RELIEF VALVE SPRING	1
9	031629	GASKET	1	37	059133	CAP SCREW, Hex Hd. Gr. 5	1
10	031632	PIN, Oowell	2	40	531076	CHECK VALVE ASSEMBLY	2
11	031623	MOTOR SHAFT	1	44	031633	PIN, Headless Star	2
12	031622	SWASHPLATE	1	45	031628	PUMP VALVE PLATE	1
13	531035	CYLINDER BLOCK KIT	2	46	031627	THRUST PLATE	1
14	031621	MOTOR VALVE PLATE	1	47	058062	COILED SPRING PIN	3
15	054127	NEEDLE ROLLER BEARING	2	48	031626	VAR. SWASHPLATE	1
16	031611	HEX HEAD PLUG	2	49	031616	PUMP SHAFT	1
17	056088	"O" RING	2	50	054071	BALL BEARING	1
18	031613	SHIM-PACK	A/R	52	031614	TRUNNION SHAFT	1
19	083157	RELIEF VALVE SPRING	1	53	059151	CAP SCREW, Hex Hd. GR. 5	1
20	031609	RELIEF VALVE CONE	2	54	031630	PIPE PLUG	2
21	059147	HEX HEAD CAPSCREW GR.5	4	55	056096	"O" RING	2
23	031608	THREADED PLUG	2	56	056097	"O" RING	2
24	031618	FILTER UNION	1	57	056098	WASHER	2
25	059126	HEX HEAD CAP SCREW	2				
26	031619	CENTER SECTION	1				
27	064153	FLAT WASHER	2				

# DASH, CONTROLS AND ELECTRICAL

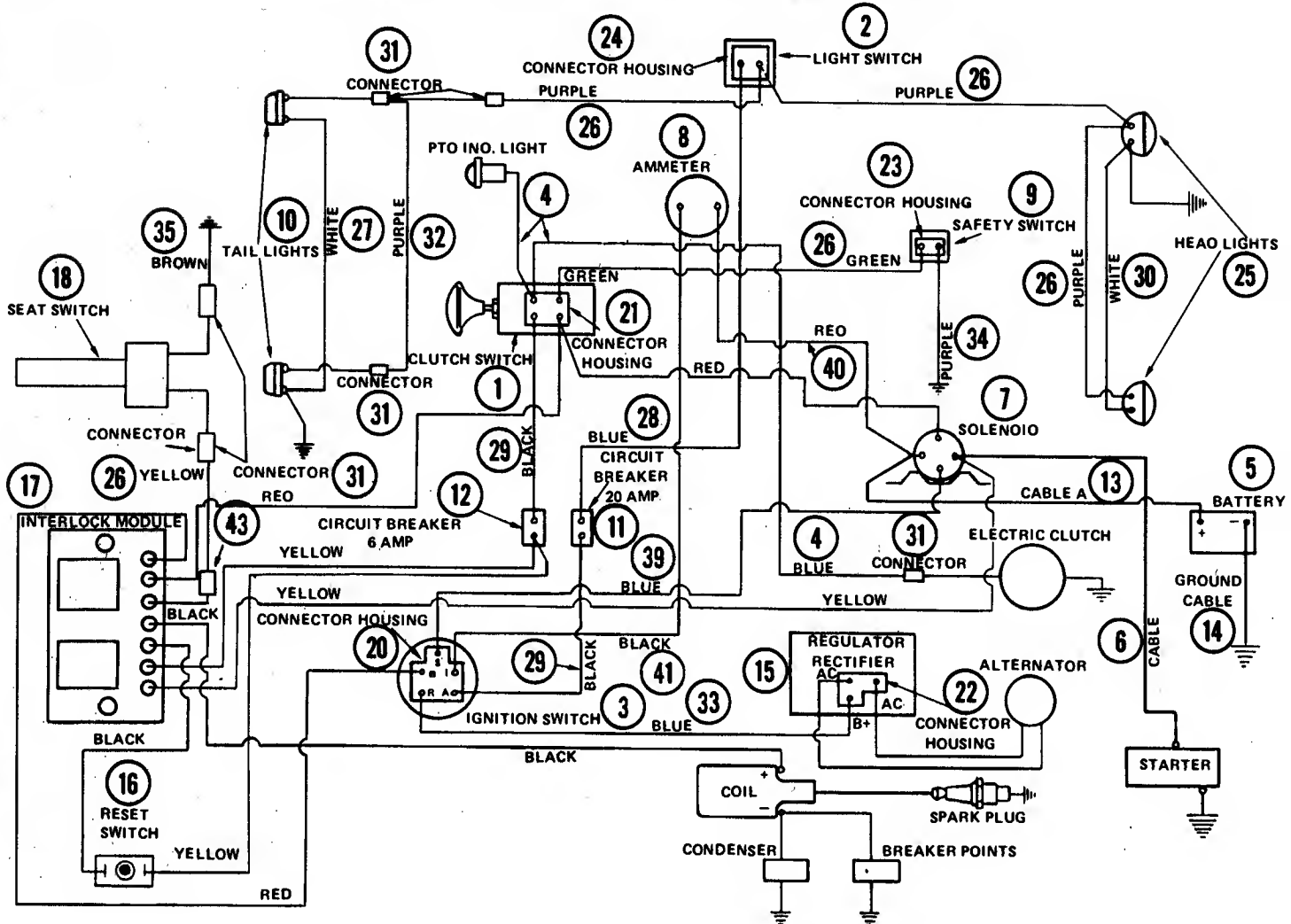
ALL MODELS



REF NO.	PART NO.	DESCRIPTION	QUANTITY				REF NO.	PART NO.	DESCRIPTION	QUANTITY			
			931016	931017	931018	931015				931016	931017	931018	931015
1	531058	OASH W/Ocal	1	-	-	-	30	025172	SWITCH	1	1	-	-
	531101	DASH W/Decal (18 H.P. Only)	-	1	-	-	31	065032	NUT, Hex, 1/4"	8	8	-	-
2	031150	SWITCH, Clutch	1	2	-	-	32	063029	LOCKWASHER, Internal Tooth, 9/16"	1	1	-	-
3	031151	SWITCH, Lights	1	1	-	-	33	075061	GROMMET	1	1	-	-
4	065104	NUT, Jam, 1/2"	2	3	-	-	34	063011	LOCKWASHER, External Tooth, No. 10	14	16	-	-
5	075068	KNOB, Switch	2	3	-	-	35	065055	NUT, Hex, No. 10-24	14	16	-	-
6	031152	SWITCH, Ignition	1	1	-	-	36	031070	CLIP	2	2	-	-
7	013157	KEY SET	1	1	-	-	37	064141	WASHER	4	4	-	-
8	065106	NUT, Special, 9/16"	1	1	-	-	38	065026	NUT	4	4	-	-
9	031179	PTO Indicator & Wire Ass'y	1	1	-	-	39	063011	LOCKWASHERS	4	4	-	-
	031983	PTO Indicator & Wire Ass'y	-	1	-	-	40	531074	RELAY - Diode	1	1	-	-
10	074043	SCREW, Self-Tapping, No. 10 x 1/2	4	4	-	-		031976	RELAY - Diode 18 H.P. Only	-	1	-	-
11	059001	CAP SCREW, HH, 1/4 x 3/4	8	8	-	-	41	031716	SEAT SWITCH	1	1	-	-
12	069103	CHOKE CONTROL ASS'Y	1	-	-	-	42	031833	BRACKET - Switch	1	1	-	-
	069115	CHOKE CONTROL ASS'Y, 18 Only	-	1	-	-	44	075045	RUBBER BOOT	1	1	-	-
13	069104	THROTTLE CONTROL	1	-	-	-	45	023478	CONNECTOR HOUSING, 5 Wire	1	1	-	-
	069116	THROTTLE CONTROL, 18 Only	-	1	-	-	46	023595	CONNECTOR HOUSING, 4 Wire	1	2	-	-
14	075019	KNOB, Throttle Control	1	1	-	-	47	031106	CONNECTOR HOUSING, 3 Wire	1	1	-	-
15	031085	BATTERY, 12 Volt	1	1	-	-	48	031895	CONNECTOR HOUSING, 2 Wire	1	1	-	-
16	031111	CABLE ASS'Y, Solenoid to Starter	1	1	-	-	49	031105	CONNECTOR	1	1	-	-
17	031720	SOLENOID STARTER SWITCH	1	1	-	-	50	031149	HEAD LIGHT	2	2	-	-
18	031117	AMMETER	1	1	-	-	51	031159	RETAINER RING	2	2	-	-
19	031107	SWITCH, Safety	1	1	-	-	52	061040	SCREW, Machine, Truss H. No. 10-1/2"	8	8	-	-
20	075057	INSULATOR	1	1	-	-	53	064001	WASHER	8	8	-	-
21	065071	NUT, Special, 5/8"	1	1	-	-	54	631006	TAIL LIGHT	2	2	-	-
22	031102	CIRCUIT BREAKER, 20 Amp	1	1	-	-			BULB - for item 54 GE 1895 (not ill.)	2	2	-	-
23	031108	CIRCUIT BREAKER, 6 Amp	1	2	-	-		031375	LENS - Red for item 54 (not ill.)	2	2	-	-
24	031110	CABLE ASS'Y, Battery to Solenoid	1	1	-	-	55	031962	HOUR METER, (Model 931015 Only)	-	1	-	-
25	031103	CABLE ASS'Y, Battery to Ground	1	1	-	-	56	075063	BOOT, Switch	1	1	-	-
26	031109	REGULATOR RECTIFIER	1	-	-	-	57	030006	SPACER, (For use with Dash No. 531058 Only)	1	1	-	-
27	063002	LOCKWASHER, 1/4"	8	2	-	-							
28	064127	WASHER, Flat 1/4"	4	4	-	-							
29	061012	MACHINE SCREW, No. 10-24 x 1/2	2	3	-	-							

# ELECTRICAL WIRING DIAGRAM

## ALL MODELS EQUIPPED WITH INTERLOCK MODULE 531074

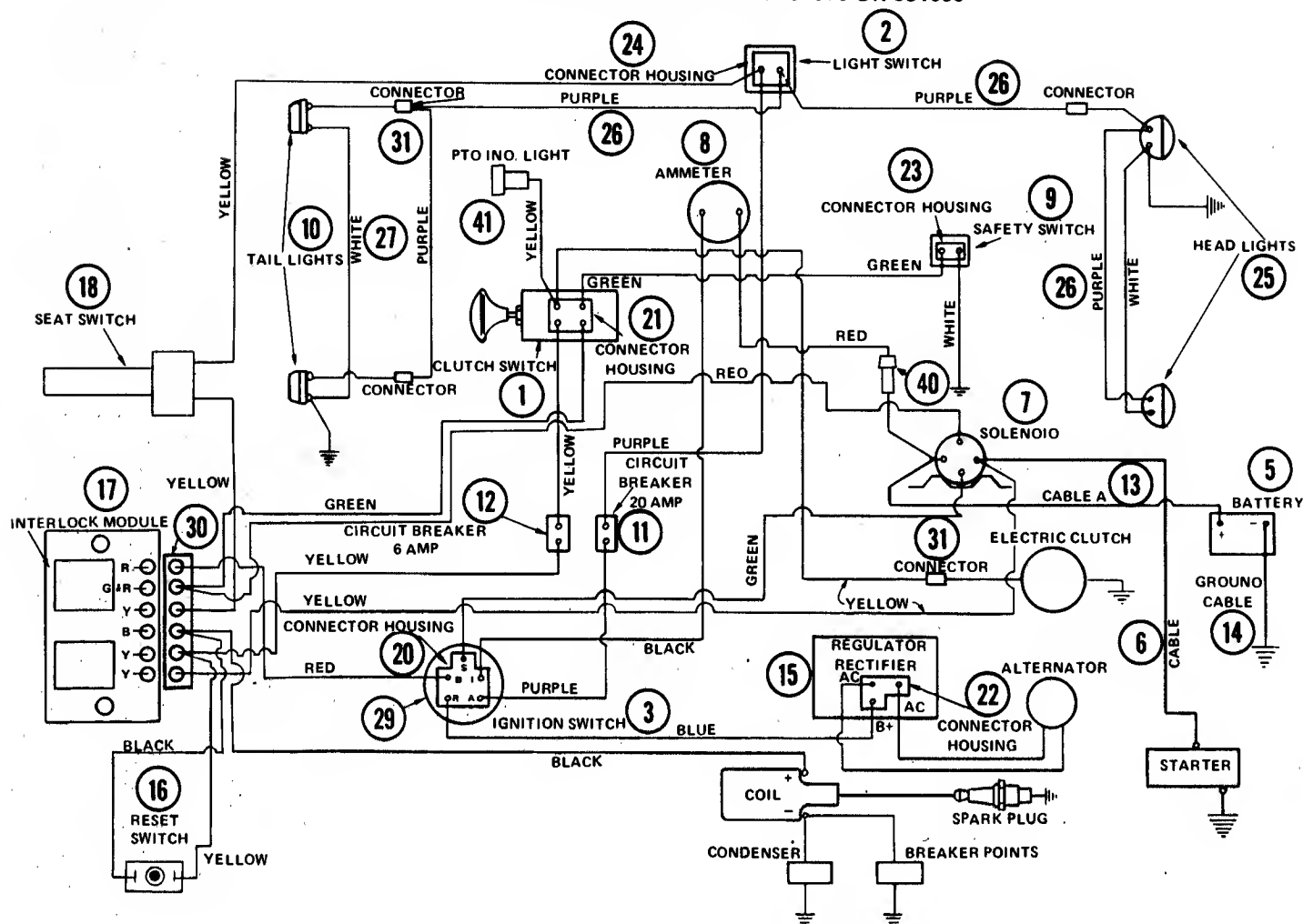


REF NO.	PART NO.	DESCRIPTION	NO. REQ'D	REF NO.	PART NO.	DESCRIPTION	NO. REQ'D
1	031150	SWITCH, Clutch	1	25	031149	HEAD LIGHT	2
2	031151	SWITCH, Lights	1	26	031722	WIRE HARNESS, 2 Wire	1
3	031152	SWITCH, Ignition	1	27	031147	WIRE HARNESS, 35" Long (white)	1
4	031179	PTO Indicator & Wire Ass'y	1			Ground for Tail Lites	1
5	031085	BATTERY, 12 Volt	1	28	031114	WIRE HARNESS, 6½" Long (blue)	1
6	031111	CABLE ASS'Y, Solenoid to Starter	1			Brake to Lite Switch	1
7	031720	SOLENOID STARTER SWITCH	1	29	031113	WIRE HARNESS, 7½" Long (black) 20 Amp	2
8	031117	AMMETER	1			Circuit Breaker to Ign. Switch. 6 Amp	1
9	031107	SWITCH, Safety	1			Circuit Breaker to Clutch Switch	1
10	631006	TAIL LIGHT	2	30	031104	WIRE HARNESS, (white) Ground for Head Lite	1
11	031102	CIRCUIT BREAKER, 20 Amp	1	31	031101	WIRE CONNECTOR	7
12	031108	CIRCUIT BREAKER, 6 Amp	1	32	031168	WIRE ASS'Y, 44½" Long	1
13	031110	CABLE ASS'Y, Battery to Solenoid	1	33	031119	WIRE, Ignition to Rectifier (blue)	1
14	031103	CABLE ASS'Y, Battery to Ground	1	34	031721	WIRE, Wire to Ground (purple)	1
15		REGULATOR RECTIFIER	1	35	031712	WIRE, Seat Switch to Ground	1
		KOHLER 237335	1	39	031715	WIRE, (blue) Switch to Solenoid	1
16	025172	SWITCH, Reset	1	40	031823	WIRE, (red)	1
17	531099	INTERLOCK MODULE	1	41	031824	WIRE, (black) Ammeter to Switch	1
18	031716	SEAT SWITCH	1	43	031895	CONNECTOR	1
20	023478	CONNECTOR HOUSING, 5 Wire	1		031192	BULB (For Item No. 4, PTO Light)	1
21	023595	CONNECTOR HOUSING, 4 Wire	1				
22	031106	CONNECTOR HOUSING, 3 Wire	1				
23	031895	CONNECTOR HOUSING, 2 Wire	1				
24	031105	CONNECTOR	1				

# ELECTRICAL WIRING DIAGRAM

## HYDROSTATIC MODELS

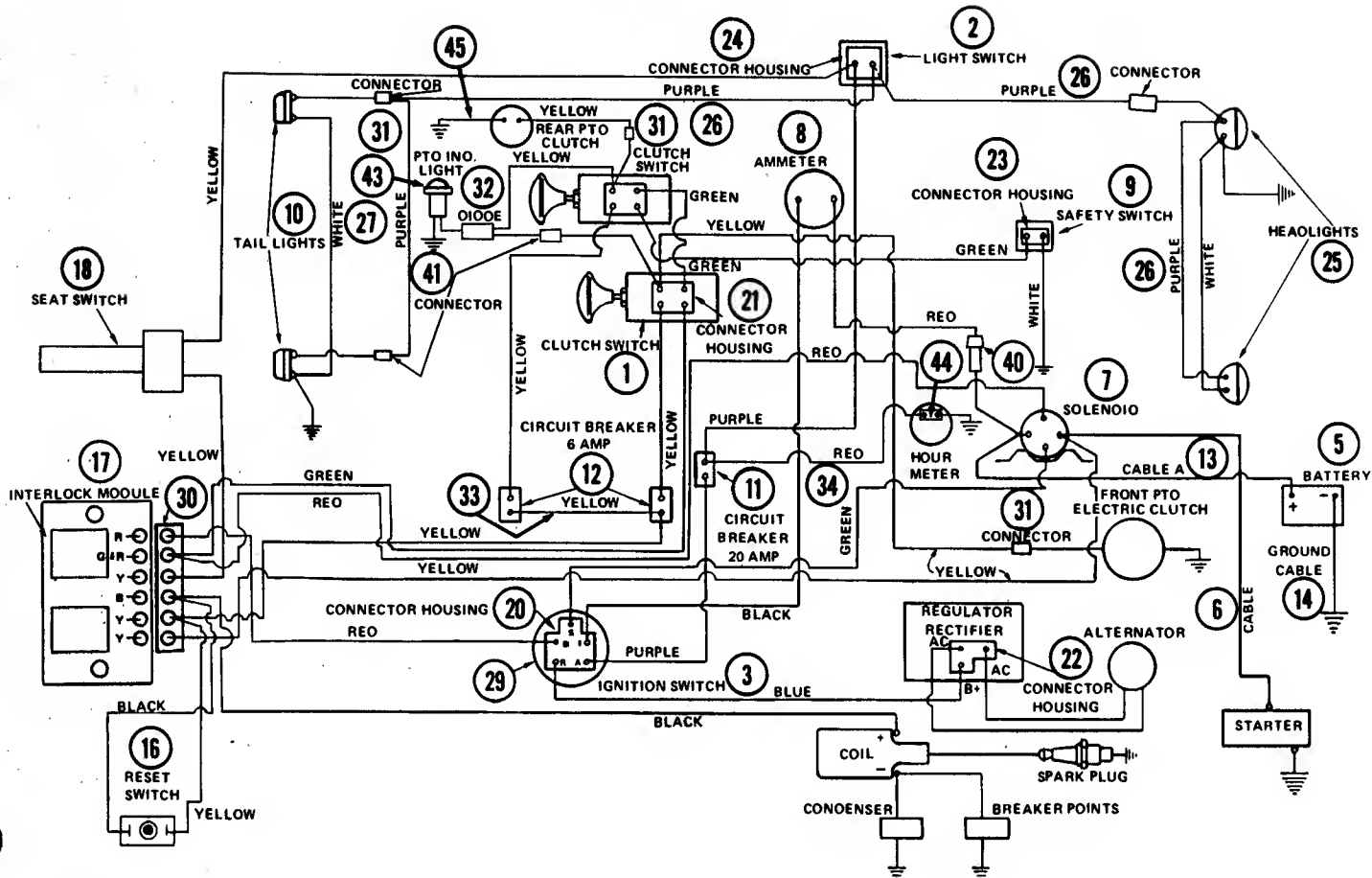
### EQUIPPED WITH INTERLOCK MODULE 31976 OR 531099



REF NO.	PART NO.	DESCRIPTION	NO. REQ'D	REF NO.	PART NO.	DESCRIPTION	NO. REQ'D
1	031150	SWITCH, Clutch	1	25	031149	HEAD LIGHT	2
2	031151	SWITCH, Lights	1	26	030002	WIRE HARNESS, Headlight & Clutch	1
3	031152	SWITCH, Ignition	1	27	030001	WIRE HARNESS, Tail Light	1
5	031085	BATTERY, 12 Volt	1	29	030003	DASH HARNESS	1
6	031111	CABLE ASS'Y, Solenoid to Starter	1	30	030004	INTERLOCK MODULE HARNESS	1
7	031720	SOLENOID STARTER SWITCH	1	31	031101	WIRE CONNECTOR	7
8	031117	AMMETER	1	40		STO, 30a SAE FUSE	1
9	031107	SWITCH, Safety	1	41	031983	PTO INDICATOR LIGHT	1
10	631006	TAIL LIGHT	2		030016	STO, 12 PSB LAMP	1
11	031102	CIRCUIT BREAKER, 20 Amp	1				
12	031108	CIRCUIT BREAKER, 6 Amp	1				
13	031110	CABLE, Battery to Solenoid	1				
14	031103	CABLE, Battery to Ground	1				
15		REGULATOR RECTIFIER KOHLE 237335, 12, 14 & 16	1				
16	025172	SWITCH, Reset	1				
17	031976	INTERLOCK MODULE	1				
18	031716	SEAT SWITCH	1				
20	023478	CONNECTOR HOUSING, 5 Wire	1				
21	023595	CONNECTOR HOUSING, 4 Wire	1				
22	031106	CONNECTOR HOUSING, 3 Wire	1				
23	029170	CONNECTOR HOUSING, 2 Wire	1				
24	031105	CONNECTOR	1				

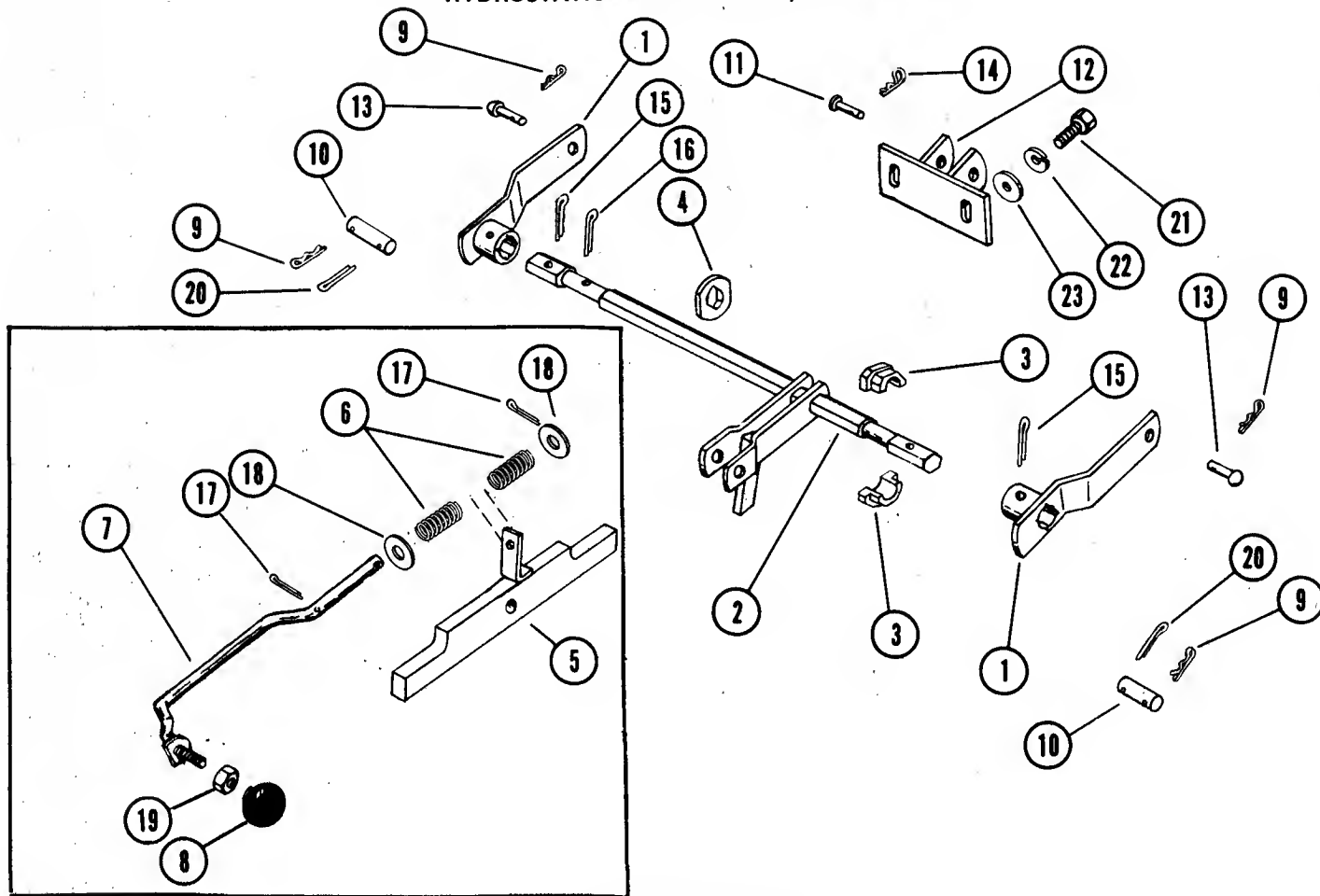
# ELECTRICAL WIRING DIAGRAM

HYDROSTATIC MODEL 931015



REF NO.	PART NO.	DESCRIPTION	NO. REQ'D	REF NO.	PART NO.	DESCRIPTION	NO. REQ'D
1	031150	SWITCH, Clutch	1	25	031149	HEAD LIGHT	2
2	031151	SWITCH, Lights	1	26	030002	WIRE HARNESS, Headlight & Clutch	1
3	031152	SWITCH, Ignition	1	27	030001	WIRE HARNESS, Tail Light	1
5	031085	BATTERY, 12 Volt	1	29	030003	DASH HARNESS	1
6	031111	CABLE ASS'Y, Solenoid to Starter	1	30	030004	INTERLOCK MODULE HARNESS	1
7	031720	SOLENOID STARTER SWITCH	1	31	031101	WIRE CONNECTOR	7
8	031117	AMMETER	1	32	031636	WIRE ASSEMBLY, Rear PTO	1
9	031107	SWITCH, Safety	1	33	031996	WIRE	1
10	631006	TAIL LIGHT	2	34	031964	WIRE HARNESS, Hour Meter	1
11	031102	CIRCUIT BREAKER, 20 Amp	1	40		STD, 30a SAE FUSE	1
12	031108	CIRCUIT BREAKER, 6 Amp	1	41	031997	GROUND WIRE, Black	1
13	031110	CABLE, Battery to Solenoid	1	42	030016	STD, 12 PSB LAMP	1
14	031103	CABLE, Battery to Ground	1	43	031983	PTO LIGHT	1
16	025172	SWITCH, Reset	1	44	031962	HOUR METER CONNECTOR	1
17	031976	INTERLOCK MODULE	1	45	002303	GROUND WIRE	1
18	031716	SEAT SWITCH	1				
20	023478	CONNECTOR HOUSING, 5 Wire	1				
21	023595	CONNECTOR HOUSING, 4 Wire	1				
22	031106	CONNECTOR HOUSING, 3 Wire	1				
23	029170	CONNECTOR HOUSING, 2 Wire	1				
24	031105	CONNECTOR	1				

# **REAR ROCK SHAFT** HYDROSTATIC MODELS 931016, 931017 & 931018

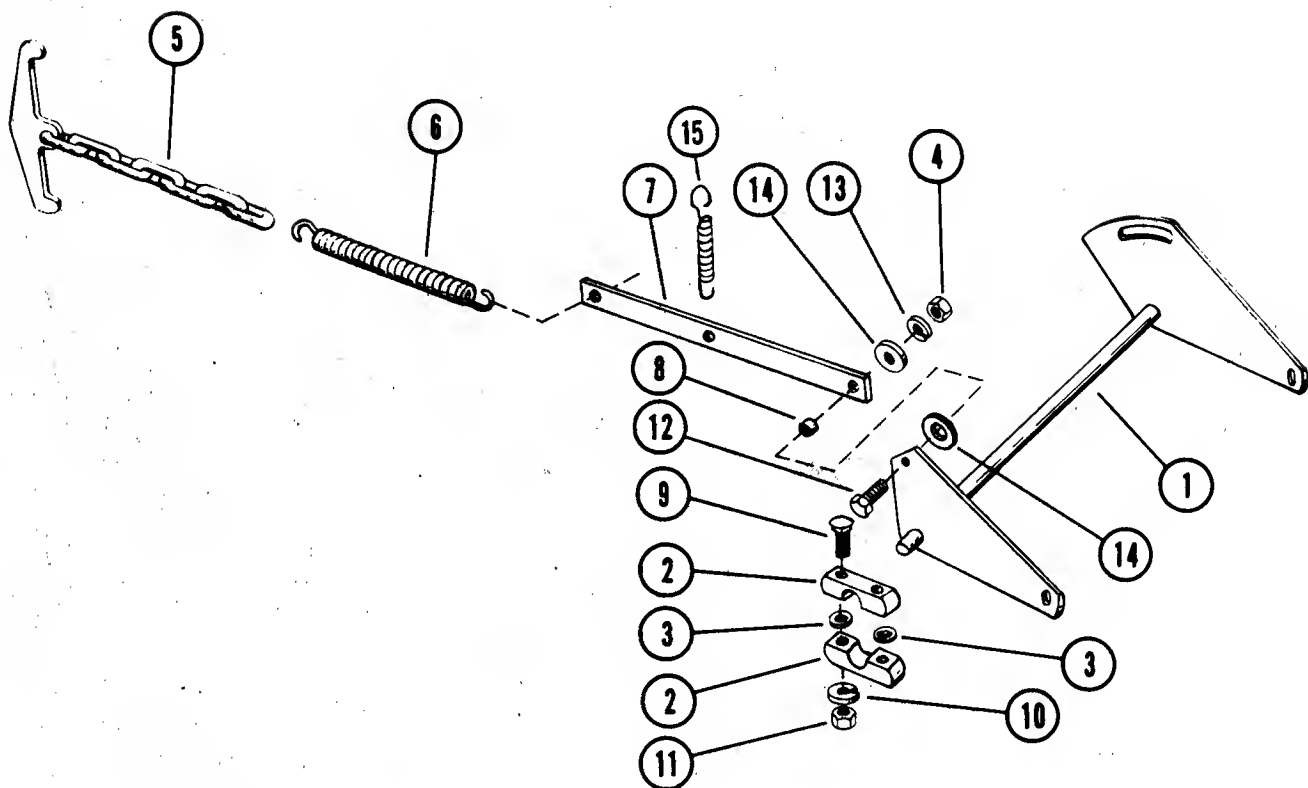


REF NO.	PART NO.	DESCRIPTION	NO. REQ'D.
1	031534	ARM	2
2	031497	SHAFT	1
3	055085	BEARING, Rockshaft	4
4	031693	WASHER, 1-1/32 Hex	1
5	031498	LATCH	1
6	083105	SPRING	2
7	031499	LATCH ROD	1
8	075052	KNOB	1
9	067022	HAIRPIN COTTER	4
10	031012	PIN	2
11	031008	PIN, Clevis	1
12	031007	BRACKET	1
13	068055	RIVET, Drilled	2
14	067029	HAIRPIN COTTER	1
15	067025	PIN, Cotter, 3/16 x 2	2
16	067012	PIN, Cotter, 3/16 x 1-1/2	1
17	067024	PIN, Cotter, 1/8 x 3/4	2
18	064043	WASHER, Flat, 3/8	2
19	065001	NUT, Hex, Jam, 3/8	1
20	067004	PIN, Cotter, 1/8 x 1	2
21	059023	CAP SCREW, HH, 3/8 x 3/4	2
22	063021	LOCKWASHER, 3/8	2
23	064008	WASHER, Flat, 3/8	2



# CENTER ROCK SHAFT

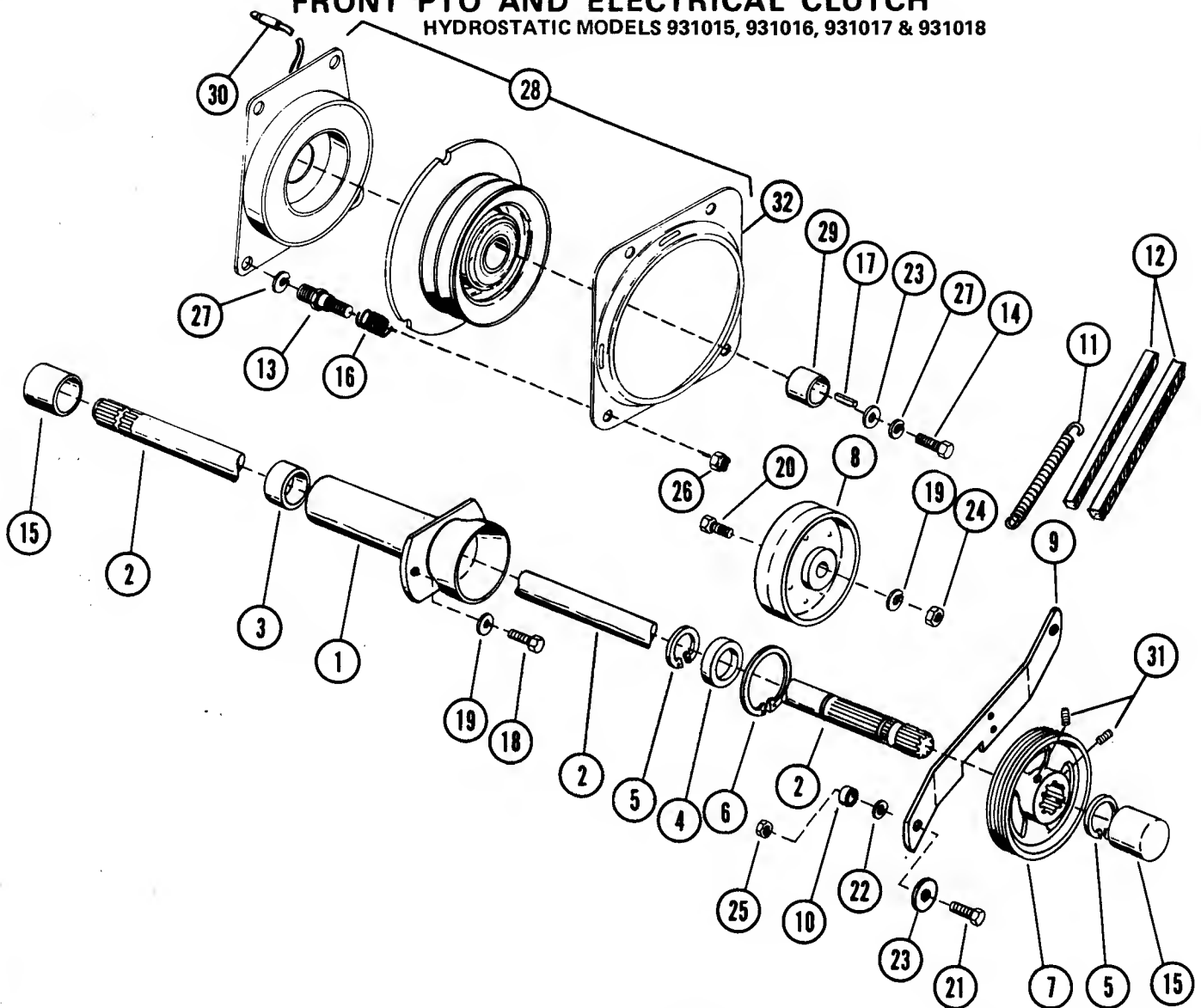
HYDROSTATIC MODELS 931015, 931016, 931017 & 931018



REF NO.	PART NO.	DESCRIPTION	NO. REQ'D.
1	031050	CENTER ROCK SHAFT	1
2	029011	BEARING BLOCK	4
3	064115	SHIM, .005 Thick	4
4	065032	NUT, Hex, 1/4"	1
5	031017	CHAIN, 11 Links	1
6	083107	SPRING	1
7	031181	LINK, 9-1/2" Long	1
8	031021	SPACER	1
9	062005	BOLT, Carriage, 3/8 x 2-1/4	4
10	063021	LOCKWASHER, 3/8	4
11	065018	NUT, Hex, 3/8	4
12	059132	CAP SCREW, HH, 1/4 x 1"	1
13	063002	LOCKWASHER, 1/4"	1
14	064127	WASHER, Flat, 1/4"	2
15	083149	SPRING	1

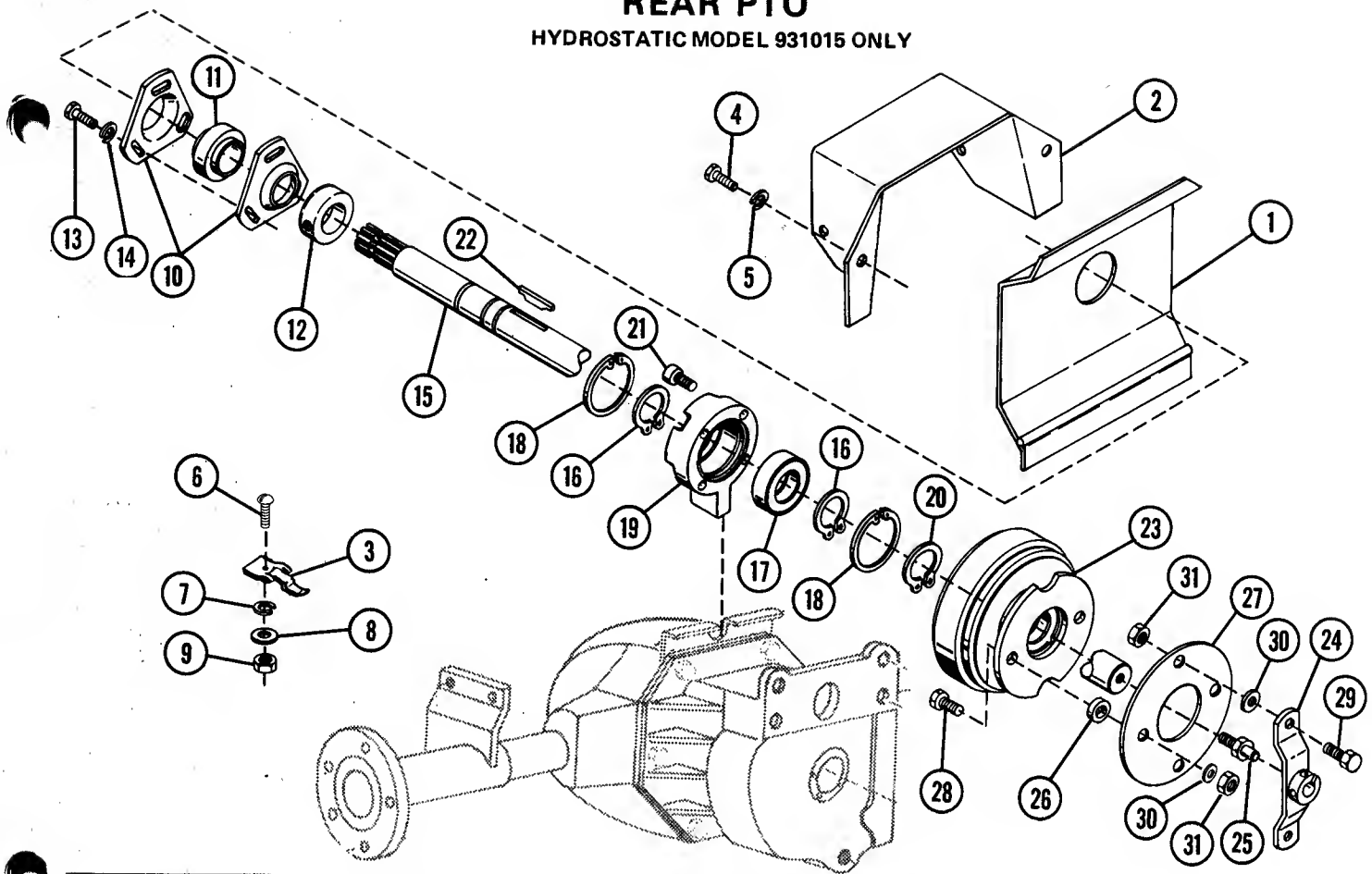
# FRONT PTO AND ELECTRICAL CLUTCH

HYDROSTATIC MODELS 931015, 931016, 931017 & 931018



REF NO.	PART NO.	DESCRIPTION	NO REQ'D	REF NO.	PART NO.	DESCRIPTION	NO REQ'D
1	531013	PTO HOUSING W/Needle Bearing	1	17	066027	KEY, Square, 1/4 x 5/8"	1
2	031183	SHAFT	1	18	059023	CAP SCREW, HH, 3/8 x 3/4	2
3	054102	NEEDLE BEARING	1	19	063021	LOCKWASHER, 3/8"	3
4	054052	BEARING	1	20	059068	CAP SCREW, HH, 3/8" x 2	1
5	057062	EXTERNAL SNAP RING	2	21	059042	CAP SCREW, HH, 1/2" x 1-1/4	1
6	057024	SNAP RING	1	22	031158	SHIM SPACER	1
7	031979	SHEAVE	1	23	064045	WASHER, Special	2
8	073055	IDLER PULLEY	1	24	065018	NUT, Hex, 3/8"	1
9	031148	IDLER ARM	1	25	065097	NUT, Hex, 1/2"	1
10	031157	SPACER	1	26	065116	LOCKNUT, 5/16"	4
11	083126	SPRING	1	27	063005	LOCKWASHER, 7/16"	5
12	072076	"V" BELT - Matched Set of Two	1	28	531023	CLUTCH	1
13	031544	STUD	4	29	031358	SLEEVE	1
14	059142	CAP SCREW, HH, 7/16 x 1	1	30	031265	TERMINAL	1
15	075060	COVER, PTO Shaft	2	31	060012	SET SCREW	2
16	083148	SPRING	4	32	031545	PLATE	1

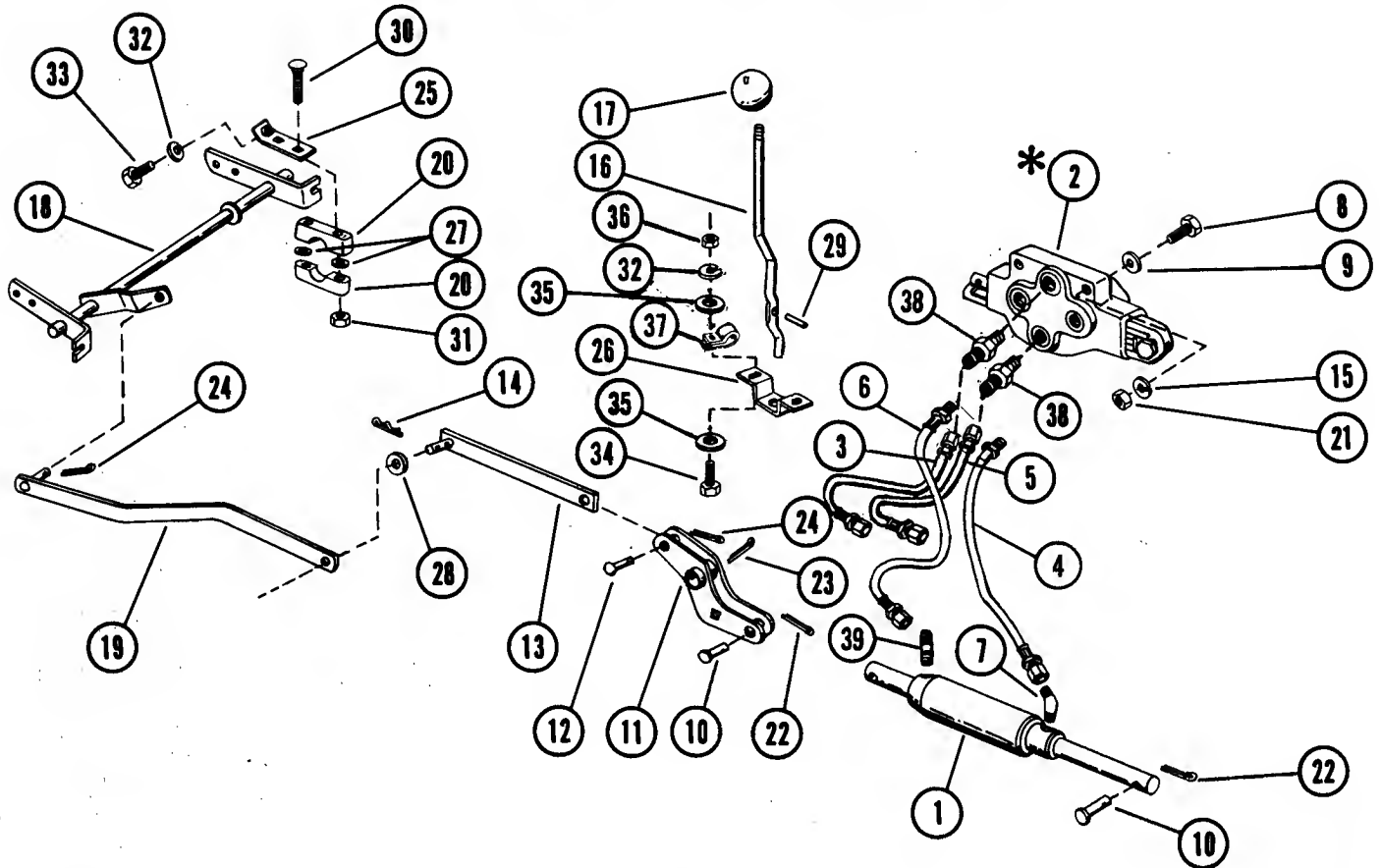
# **REAR PTO** HYDROSTATIC MODEL 931015 ONLY



REF. NO.	PART NO.	DESCRIPTION	QTY	REF. NO.	PART NO.	DESCRIPTION	QTY.
1	031530	COVER	1	17	054052	BEARING, Ball	1
2	031571	SHIELD	1	18	057024	SNAP RING, Internal	2
3	031305	SNAP FASTENER	1	19	031989	BEARING HUB	1
4	074017	SCREW, Self Tapping HH, 5/16 x 3/4	2	20	057073	SNAP RING, External	1
5	064002	WASHER, Flat 5/16	2	21	074061	CAP SCREW, Socket Head, No. 10-24 x 1"	4
6	061050	SCREW, Machine, R.H. No. 10 x 1"	1	22	066022	KEY	1
7	063026	LOCKWASHER, External Tooth, No. 10	1	23	031990	CLUTCH ASSEMBLY	1
8	064141	WASHER, Flat, 3/16	1	24	031988	HUB	1
9	065055	NUT, Hex, No. 10	1	25	031992	STUD	1
10	031020	FLANGETTE	2	26	025062	SPACER	1
11	054110	BEARING, Ball	1	27	031993	COUPLING	1
12	031315	COLLAR	1	28	059181	CAP SCREW	2
13	059022	CAP SCREW	3	29	059135	CAP SCREW	2
14	063003	LOCKWASHER	3	30	064123	WASHER	4
15	031991	SHAFT, Rear PTO	1	31	065042	LOCKNUT	4
16	057062	SNAP RING, External	2				

# HYDRAULIC LIFT AND FRONT ROCK SHAFT

HYDROSTATIC MODELS 931015, 931016, 931017, & 931018



REF NO.	PART NO.	DESCRIPTION	NO REQ'D.	REF NO.	PART NO.	DESCRIPTION	NO REQ'D.
1	531043	CYLINDER ASS'Y (includes adapters)	1	20	029011	BEARING BLOCK	4
*2	031170	VALVE	1	21	065032	NUT, Hex, 1/4"	2
3	031496	TUBE 11" Long, Valve to Reservoir	1	22	067004	PIN, Cotter, 1/8 x 1	2
4	031692	HOSE, 21-1/2" Long, Valve to Cylinder	1	23	067006	PIN, Cotter, 3/16 x 1-1/4	1
5	031520	TUBE 5-3/4" Long, Valve to Pump	1	24	067026	PIN, Cotter, 3/16 x 1"	2
6	031058	HOSE, 24-1/2" Long, Valve to Cylinder	1	25	031014	BRACE	1
7	031068	ADAPTER, 1/4 to 9/16, 45°	1	26	031076	BRACKET	1
8	059050	CAP SCREW, HH, 1/4 x 1-1/2	2	27	064115	SHIM, .005 Thick	4
9	064127	WASHER, Flat, 1/4"	2	28	064009	WASHER, Flat, 3/4	1
10	031051	PIN, Clevis	2	29	058053	GROOVE PIN, 1/4 x 3/4	1
11	031063	BELL CRANK	1	30	062005	BOLT, Carriage, 3/8 x 2-1/4	4
12	068061	PIN	1	31	065098	LOCKNUT, Hex, 3/8	4
13	031500	LINK	1	32	063003	LOCKWASHER, 5/16"	3
14	067029	HAIRPIN COTTER	1	33	059134	CAP SCREW, HH, 5/16 x 1-1/4 GR.5	1
15	063002	LOCKWASHER, 1/4"	2	34	059022	CAP SCREW, HH, 5/16 x 3/4	2
16	031189	CONTROL ROD	1	35	064002	WASHER, Flat, 5/16	4
17	075052	KNOB	1	36	065015	NUT, Hex, 5/16	2
18	531005	FRONT ROCKSHAFT	1	37	069094	J - CLAMP	1
19	031015	CONNECTOR LINK	1	38	031495	CONNECTOR	2
				39	031634	ADAPTOR	1

\*531041 Section Repair Kit Available

\*531057 Spool Repair Kit Available

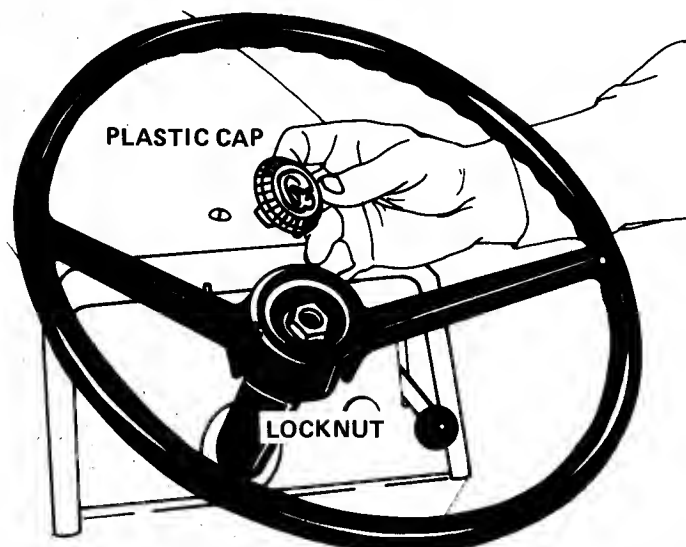


Figure 1A

### STEERING WHEEL

Install steering wheel on the column as shown in Figure 1A. Secure with nut provided. Place the plastic cap firmly in the steering wheel hub.

### SERVICE BATTERY

Remove the battery from the tractor. This will prevent any accidentally spilled electrolyte from damaging the tractor.

Electrolyte is not furnished with the tractor. Use only battery grade sulphuric acid electrolyte with 1.265 specific gravity plus or minus 0.005 corrected to 80° F.

Prepare battery as follows:

1. Remove vent plugs.
2. With battery removed from the tractor, fill each cell with electrolyte until electrolyte level rises to split ring at the bottom of the filler tube. **DO NOT OVERFILL.**



**CAUTION:** Electrolyte contains sulphuric acid which is harmful to skin, eyes and clothing. Handle with extreme care. If spillage occurs on body or clothing, rinse at once with water.

3. After filling cells, wait five to ten minutes and add additional electrolyte if necessary to bring electrolyte to proper level.

4. Charge battery with a 12 volt charger for 30 minutes at 4 to 6 amps.

5. After charging, add electrolyte until level is up to the split ring in the filler tube. Thereafter, add only clean, distilled water as use and time requires.

6. Replace vent caps. Clean and dry battery exterior.

### INSTALL BATTERY

Place the battery in the battery carrier as shown in Figure 2A with the positive (+) terminal to the right side of the tractor.

Secure the battery in place with the battery hold down bolts, flat washers and locknuts as shown in Figure 2A. Do not overtighten these bolts.

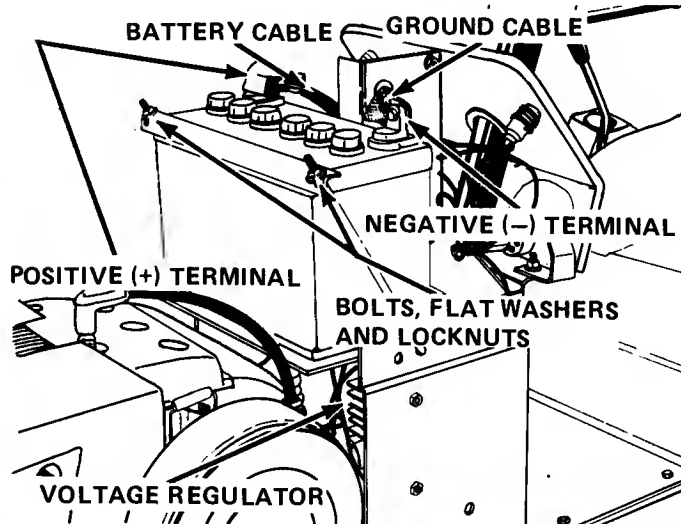


Figure 2A

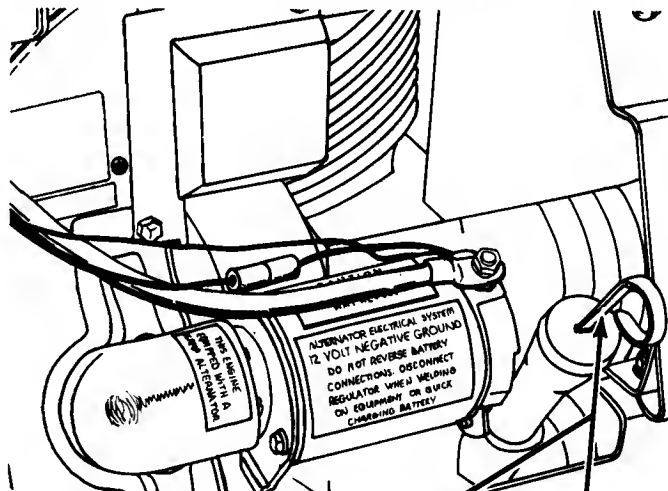
Attach the battery cable to the positive (+) terminal and the ground cable to the negative (-) terminal as shown in Figure 2A. Tighten the cables to the terminals securely.

Coat the terminals and battery cable ends with a light coat of grease or petroleum jelly to prevent corrosion.

### ENGINE

Fill the engine crankcase (Fig. 3A & 4A). Use Ariens Gard-N-Yard MS 10W-30 oil when using lawn and garden attachments and SE 5W-20 when using snow removal attachments.

Do not overfill – Oil level must never exceed full mark.



### CHECK OIL LEVEL

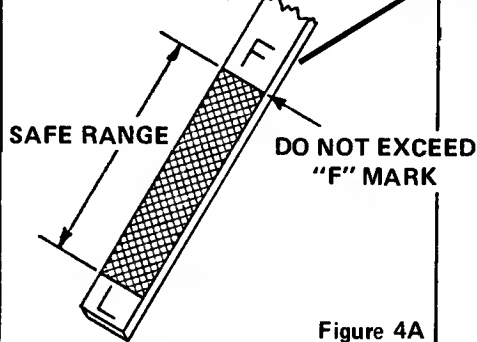


Figure 4A

### DIPSTICK

Figure 3A

### CHECK TRANSMISSION OIL LEVEL

The hydrostatic transmission, differential and hydraulic lift system (if the tractor is so equipped) all operate from a common oil reservoir.



**CAUTION:** Proper oil level is essential for full braking effect and protection against severe damage to the transmission.

Use the following procedure to check the transmission oil level:

1. Be sure tractor is level and tires are inflated properly.
2. Wipe dirt from around the oil level and filler plug. Figure 6A.
3. With engine running, remove plug. Oil level is correct when it is at the top of the filler elbow as shown in Figure 6A.

4. If necessary, use a small funnel to add sufficient ARIENS 10W-30 Gard-N-Yard oil to bring the oil up to the proper level. Replace plug.

Be very careful to prevent dirt and foreign materials from entering the oil reservoir when checking the oil.



**IMPORTANT:** Do not push or tow tractor long distances as internal transmission damage could result. Load tractor on truck or trailer when delivering to purchaser.

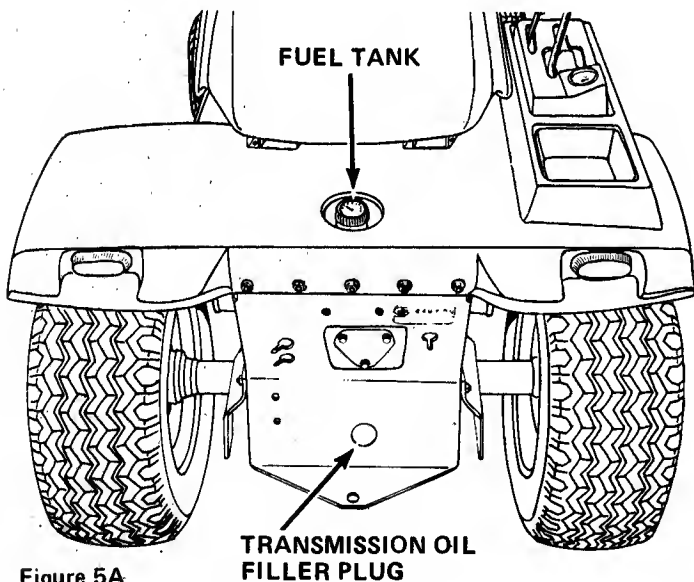


Figure 5A

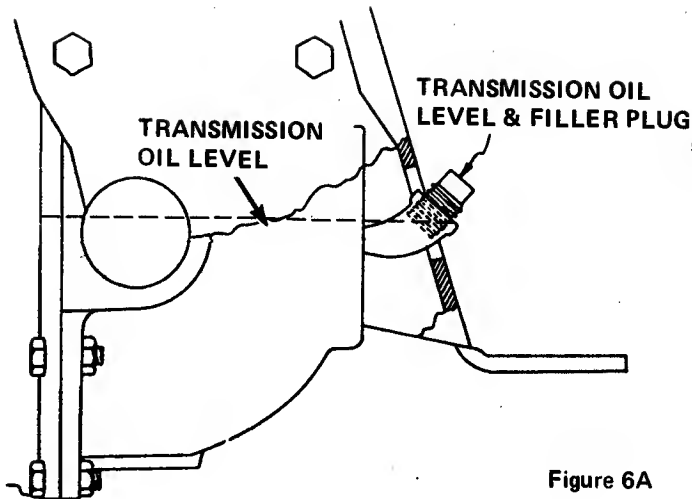


Figure 6A

### FILL FUEL TANK

Fill fuel tank with regular grade gasoline. Do not use premium gasoline.

### CHECK TIRE PRESSURE

Inflate tires to pressures shown in the chart below. Use a low pressure tire gauge for accurate readings.

TIRE SIZE	LOADING		
	Light	Medium	Heavy
Front 16 x 6.50 x 8	(Lawn Work) 8 p.s.i.	(Sno - Thro) 12 p.s.i.	16 p.s.i.
Rear 23 x 10.50 x 12	(Lawn Work) 6 p.s.i.	(Rotary-Tiller) 8 p.s.i.	10 p.s.i.

### CHECK SAFETY INTERLOCK SYSTEM

To make sure that the safety interlock system has not become disconnected or damaged in shipment, check to see that the tractor will not start unless:

- a. The shift lever is in the PARK/START position
- b. Implement Power Control Switch is in the OFF (In) position.

If the engine starts with above controls in any other position, the safety interlock must be corrected before delivery.

## DELIVERY

Using the Owner's Manual as a guide, instruct the customer as follows:

1. Instruct the customer on the operation of the tractor. Emphasize safety and discuss the safety information in the Owner's Manual.
2. Advise customer to change oil in the engine crankcase after the first five hours of operation.
3. Explain how to perform the recommended lubrication and periodic service.
4. Explain maintenance and adjustment instructions.
5. Demonstrate how to mount and dismount attachments.
6. Make certain the customer has his Owner's Manual.
7. Explain Ariens Warranty Policy. Fill out and return Ariens Warranty Registration Card.